NETWORK WORLD
THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING
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Get back to reality! New column on page 63.

InVision to deliver broadcast videoconferencing to desktops

BY ELLEN MESSMER

Vienna, Va.

InVision Systems Corp. next month will release an upgrade to its Windows-based videoconferencing product that will make it the first personal computer-based video system to support broadcasting over IP-based LANs and WANs.

By year end, InVision also plans to provide multipoint functionality so users can establish interactive videoconferencing sessions with as many as four other users simultaneously. The firm will deliver Macintosh and Unix versions of its software early next year.

InVision this week also will outline its efforts to become more standards conscious.

The IP multicasting feature, for example, will use the IETF's standard RFC 1190, called Streaming Version 2 (ST-II). InVision, whose product will support broadcasting to hundreds of users simultaneously, will need router vendors to support this standard, as well. Last

See InVision, *page 62*

Standards focus

Key specifications to be adopted by InVision:

- **H.320** - Video and audio over ISDN
- **Streaming Version 2** - Video multicast over TCP/IP; quality-of-service definition
- **Distance Vector Multicast Routing Protocol** - Video multicasting as used on the Internet's Multicast Backbone

NetFRAME bringing SMP punch to new high-end servers

BY MICHAEL COONEY

Milpitas, Calif.

NetFRAME Systems, Inc. next month will unleash a new generation of high-end symmetric multiprocessing (SMP) servers designed to squeeze top performance out of upcoming versions of NetWare.

The servers will support more processors than NetFRAME's current multiprocessor models, plus new fault tolerance and clustering features. NetFRAME's goal is to help users consolidate general-purpose file and application servers into a powerful, reliable box supporting core business applications.

The rollout ties in nicely with Novell, Inc.'s plan — dubbed Distributed Parallel Processing (DPP) — to

See NetFRAME, *page 62*

COMPARATIVE REVIEW

A really FastSwitch

Grand Junction's Ethernet switch emerges as best all-around performer, topping three other products that excel in niche areas.

NETWORK WORLD TEST alliance

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READER ADVOCACY FORCE

Vendors vent on Microsoft's power

BY BARB COLE
AND KEVIN FOGARTY

Redmond, Wash.

Most independent software vendors (ISV) have a love-hate relationship with Microsoft Corp.: They love the market opportunity that comes from products based on Microsoft standards, but they hate not having enough input in the standards creation process.

Microsoft *sets the* **Standards**

Last in a 3-part series.

ISVs are also uncomfortable about the competitive edge Microsoft gets from establishing, as de facto standards, interconnectivity specifications such as Object Linking and Embedding (OLE) and Open Database Connectivity (ODBC). One way or another, Microsoft's products always seem to support the standards first and best.

To level the playing field a bit, Microsoft needs to work more closely with standards groups once it has developed specs or even earlier, according to the ISVs. Microsoft also needs to make it easier for other vendors to implement its standards and open them up to platforms other than Windows.

Currently, ISVs say the emphasis on Microsoft standards hurts their ability to build to other standards and explore new technologies. It also contributes to users getting locked into Windows-centric networks, they said.

"I hate being held hostage by these people; it makes me crazy," said

See Microsoft, *page 8*

NEWSPAPER

IBM gets the team spirit with apps tool

Team Connection to replace failed AD/Cycle.

BY KEVIN FOGARTY

Cary, N.C.

Next month, IBM will announce Team Connection, a set of LAN-based application development products that enable groups of developers scattered across an enterprise to collaborate on the creation of large-scale transaction applications.

The firm also plans to beef up its existing VisualAge and VisualGen development tools by adding links to its MQSeries middleware — a move that will reduce the need to write communications code.

IBM intends Team Connection to fit the slot originally planned for AD/Cycle, a software repository and development environment that failed because it only ran on 3090 mainframes, said Mark Hanner, an analyst at META Group, Inc. in Burlingame, Calif.

According to an IBM source close to the development, Team Connection will include an object repository that IBM intends to be the central software library for the enterprise. It will include components called LAN Library and Data Dictionary, as well as a systems management capability.

It will also include Automated Build, which auto-

See IBM, *page 61*

IBM's development plans

Readying group development product that will include:

- LAN Library
- Repository
- Data Dictionary
- Automated Build
- Version control and systems management

Will also enhance:

- VisualAge by adding links to MQSeries, reducing the amount of communications code developers have to write.
- VisualGen by providing sample applications with MQSeries communications code. Developers can cut and paste MQSeries connectivity into their own applications.

Voice over frame relay finds home in niche applications

BY MICHAEL CSENGER

Users looking to save a buck on long-distance are mulling a frame relay option that supports voice calls with quality good enough for some applications.

Packet-voice technologies offered by a growing list of vendors let users multiplex data, voice and fax traffic over a single frame relay link. The rationale for such products is as old as time-division multiplexers: If you already have a data link to a remote location, why not piggyback a voice channel on it to save money?

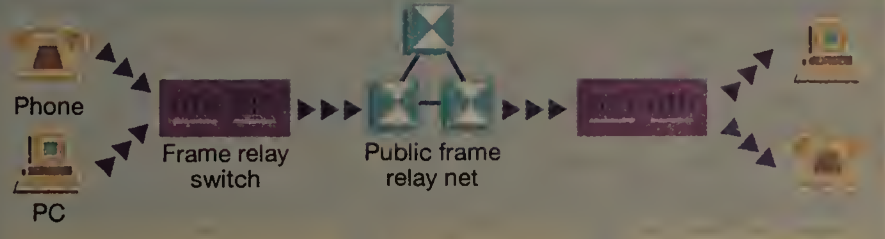
The difference now is that frame relay services are much less expensive than the leased lines traditional muxes require.

Pacific Office Automation, Inc., for example, connects four branch offices to its headquarters in Bellevue, Wash., over Pacific Bell's PacNet frame relay services.

"We were adding new offices to our leased-line network and found considerable savings by going to frame relay," said Jerry Romjue, Pacific Office's controller. "Those savings alone paid for

See Frame relay, *page61*

Adding voice to the frame relay mix



1. Voice is compressed, then multiplexed with data traffic. All traffic is encapsulated in frames of limited size, usually between 60 and 128 bytes.
2. Transmission through the network is likely to result in packet delays.
3. To limit the effects of delay, voice traffic is buffered for 20 to 60 msec before delivery.

GRAPHIC BY TERRI MITCHELL

Briefs

Nice purchase by 3Com. 3Com Corp. last week moved to fill in some key pieces of its High-Performance Scalable Networking strategy with the announcement of an agreement to acquire LAN and ATM switch maker NiceCom, Inc. of Lexington, Mass. 3Com paid $58.5 million for the start-up, which only a month ago trotted out its NiCell product line (*NW*, Aug. 22).

AS/400 under attack. Hewlett-Packard Co. last week launched an assault on IBM's Application System/400, promising to deliver hardware that is faster, less expensive, has an easier application development environment and better enterprise connectivity. Under Open Midrange Alternative, HP will offer its Unix-based HP 9000 server platform at up to a 30% discount.

Wang polishes its imaging system. Wang Laboratories, Inc. plans to announce this week that it will integrate its Open/image imaging product with Gupta Corp.'s SQL Windows application development tool. Separately, Wang last week announced that it will purchase Groupe Bull's imaging and workflow software business, federal systems integration group and customer service unit for $160 million.

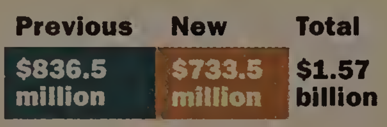
Wireless bidding. The Federal Communications Commission last week announced that its auction of the first 99 broadband personal communications services licenses will begin Dec. 5 in Washington, D.C. The auction is expected to take as many as eight weeks to complete. Prospective bidders must file applications by Oct. 28 and deliver deposits by Nov. 18. For a complete bidder's package, called the FCC Auction Hotline at (202) 418-1400.

Management money. A group of about 50 investors last week forked over $45 million (Canadian) in total to fund development of a network management product from Toronto-based National Hav-Info Communications, Inc. (NHC). NHC develops Wireman, a personal computer-based software package that allows network administrators to track, monitor and manage computers, communications equipment and cabling infrastructures of LANs in remote branch offices. NHC plans to release Wireman next month.

Getting up to speed. Wellfleet Communications, Inc. last week unveiled software for its routers that provides LAN connectivity across WANs at native LAN speeds. Called Native Mode LAN, the software supports the IEEE 802.10 specification for running LAN traffic over wide-area links at LAN speeds.

Sybase loses Momentum. Sybase, Inc. is expected to soon announce some new delivery dates for its long overdue Build Momentum application development tool and its Enterprise Momentum development framework. Sources said Sybase will deliver Build Momentum, which was supposed to ship in the first quarter of 1994, by year end. Enterprise Momentum, which missed its second quarter of 1994 delivery date, will not appear until the middle of 1995, sources said. When they do ship, the products will also not include all the promised functionality, sources said.

Satellite stockpile. The Motorola, Inc.-led Iridium, Inc. consortium has completed equity financing for its satellite net by raising another $733.5 million, bringing the total commitment to $1.57 billion.



Collabra, Banyan get together. Collabra Software, Inc. and Banyan Systems, Inc. will announce this week an agreement to integrate Collabra's Collabra Share electronic bulletin board with Banyan VINES, Intelligent Messaging and BeyondMail.

The Lotus shuffle. Lotus Development Corp. last week announced a reorganization that finally brings Notes and cc:Mail development into a single division and which sees the departure of the vice president who was in charge of cc:Mail.

The new Communications Products Group will be headed by Jeff Papows, a long-time Lotus executive who has focused on Notes marketing, and Michael Zisman, president of SoftSwitch, Inc. until its acquisition by Lotus earlier this year. Papows will concentrate on marketing, while Zisman will focus on technology. Larry Crume, formerly the vice president who oversaw cc:Mail, has left to pursue other interests.

For details on how to reach us, see back page.

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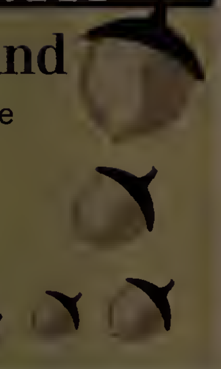
IN A NUTSHELL

Common ground

Users facing the formidable task of managing data backups in client/server LAN environments will find relief in the System Independent Data Format. **Page 48.**



Network HELP desk

Network World tracks down answers to your questions regarding products, services, technologies or disputes with vendors. Please submit questions to Dana Thorat at (800) 622-1108, via fax at (508) 820-1103 or (508) 820-3467, via the Internet at djt@world.std.com or via CompuServe at 73244,2673.

Our company is developing a product that requires the use of digital signatures. What software products are available that would allow us to build digital signature authentication into our product? Also, what is the legislation regarding acceptance of digital signatures?

Warrick Taylor, San Francisco

Jonathan Wheat, a security consultant at the National Computer Security Association (NCSA), a Carlisle, Pa.-based organization that actively promotes security awareness to microcomputer and network users, replies:

To build digital signature authentication into your product, you must license the algorithms involved. One option is to obtain the algorithms from the National Institute of Standards and Technology (NIST). Both the Digital Signature and Secure Hash Algorithms allow implementation of digital signatures into applications. For more information about the algorithms, call NIST's Federal Information Processing Standards office at (301) 975-2816.

Another product is RSA Data Security, Inc.'s Toolkit for Interoperable Privacy-Enhanced Messaging (TIPEM), which allows programmers to develop secure, interoperable messaging, workflow and forms applications using encryption and digital signature technology. The tool kit costs $450. For more information about TIPEM, call (415) 595-8782.

There are many other software encryption products available; but most are stand-alone applications that cannot be implemented into a new product.

For more information about digital signature authentication, you might also want to check out several books, which are available through the NCSA. *Applied Cryptography* by Bruce Schneier (John Wiley & Sons, Inc.) takes you through the different types of encryption and lists protocols, algorithms and source codes. The book costs $44.95.

Another good resource is *Top Secret Data Encryption Techniques* by Gilbert Held (Sams Pub-

See **Helpdesk**, *page 42*

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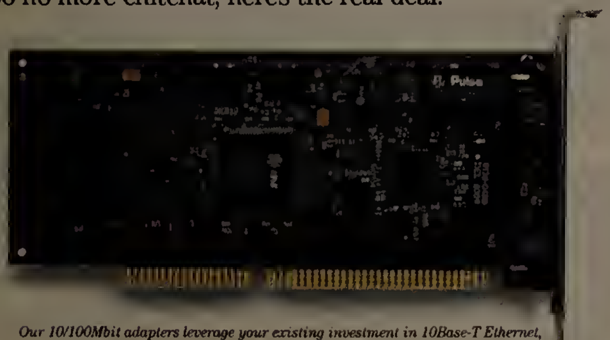

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Microsoft suite deal sparks interest, but users skeptical

BY PEGGY WATT

Dallas

Microsoft Corp. may compete with itself in its battle for the network client.

Prospective users checking out Microsoft's new BackOffice suite of Windows NT-based server products, announced here last week at Windows World '94/Networks Expo, said they want to see Windows95 (popularly known as Chicago) before they invest in new desktop systems.

BackOffice is an attractively priced package that includes the Windows NT 3.5 operating system, Systems Management Server (SMS) 1.0, SNA Server 2.1, SQL Server 4.21a and Microsoft Mail 3.2.

Microsoft's Michael Nash details company's BackOffice package. Page 21.

But network managers said it will take more than a great price or bonus products to get them to switch from existing systems.

"Even if Microsoft offered it for free, we wouldn't necessarily migrate because of the retraining costs," said William Fox, manager of premise systems integration for American Airlines, Inc. in Fort Worth, Texas.

Even if users are not immediately buying into BackOffice, they welcome the release of the updated Windows NT 3.5.

"We use Windows NT on the server for file sharing and printer services, and the performance of Version 3.5 is much better," said David Harrison, a network specialist with Prevue Networks, Inc., a Tulsa, Okla.-based video and satellite firm. But Harrison will not consider switching his 500-plus client systems to Windows NT Workstation 3.5 until he can also evaluate Windows95.

Harrison is looking forward to the debut of SMS, formerly called Hermes. "We've been looking for something like this for some time," he said. His technicians will appreciate its remote diagnosis and management features because they can treat systems troubles from a distance. But Microsoft's aggressive BackOffice pricing strategy will not matter to Prevue, which already has a volume purchase contract with Microsoft.

Also waiting for Windows95 is Raymond Bayley, a net manager with E-Systems, Inc., a Garland, Texas, defense contractor. Bayley has one 20-member work group using Windows NT linked to a much larger NetWare installation that has 15 servers and 2,000 users running Windows 3.1 and DOS.

"The people who have NT [on the desktop] love it," Bayley said. But he's holding off on changing any more clients until he evaluates Windows95.

Despite the competitive upgrade price and conversion kit Microsoft offers to encourage migration from NetWare to Windows NT, the likeliest buyers are not those seeking a price break or an easy transition. Rather, they are those already planning to get a new network operating system.

Renea Honea, a network technician with the Army and Air Force Exchange service here, said her office will evaluate Windows NT along with IBM's LAN Server 4.0 to replace its Microsoft LAN Manager network. "Since we're in transit, we have more options," she said.

Darrell Greifzu, information services manager for Irving, Texas-based Neiman Marcus Co., said his firm is trying to link some departmental nets and will consider Windows NT. "We'd like to stay with Unix because we have an Ingres database," he said. "But at least we don't have the baggage of a legacy network to worry about."

Managers consider Microsoft's updated SNA Server one of the advantages of Windows NT.

Broadus Jones, advanced systems engineer with Bank of America Corp. in Irving, said the product could help him manage his IBM Application System/400 machines.

"Someone has to physically retrieve [data] and fix problems now. SNA Server could generate exception reports remotely," he said.

Cisco to pitch ATM integration protocol

BY JIM DUFFY

Ottawa

Cisco Systems, Inc. this week will nudge the ATM Forum to begin working on a standard method for passing routing information from routers to LAN and Asynchronous Transfer Mode switches.

At the ATM Forum meeting here, Cisco intends to propose the organization define what it calls the Route Processor Protocol that would be used to dump routing information from centralized route processors into LAN and ATM switches.

The protocol would be a key element of next-generation switched internetworks. In these nets, switches would replace routers as workgroup and domain connectivity devices but routers would still calculate routes and define network paths. This information would then be passed on to switches so they could make routing decisions while filtering and forwarding packets and cells.

Cisco's rationale for standardizing the Route Processor Protocol is to avoid vendors building proprietary versions of similar protocols, which, the company says, could hinder interoperability between multivendor switches and routers.

"Our customers tell us that [CiscoFusion] is a good architecture but they'd only get locked into proprietary solutions."

"Our customers tell us that [CiscoFusion] is a good architecture but they'd only get locked into proprietary solutions," said Anthony Alles, ATM product manager for Cisco.

Users were indifferent to Cisco's proposal. They said there are other activities relative to ATM that are more important.

"We are working feverishly on getting a formal position on the issue of flow control," said Bud Huber, vice president of user activities for the ATM Forum and manager of strategic planning at Hughes Aircraft Co. in Long Beach, Calif. "If this issue doesn't get resolved, then all the rest of it is for naught."

Cisco's proposal calls for the protocol to be of a client/server design, where the switch acts as a client requesting the route processor, or server, to map end system network layer addresses into ATM addresses. The switch will then use this ATM address to set up a direct ATM connection with the end system.

The protocol must also support the ATM Forum's User-to-Network Interface Versions 3.0 and 3.1, according to Cisco, and Phase 0 of the Forum's Private Network-to-Network Interface protocol for switch interoperability. In addition, the Route Distribution Protocol must support all Layer 3 network protocols, such as IP, IPX, AppleTalk and others, Cisco said.

Other requirements, according to Cisco's proposal, is that it allow for both direct or cut-through routes across logical subnets, and indirect routes, such as through a router; enable clients to register their network layer addresses with the route server; map network layer multicasts into ATM multipoint connections; and minimize the probability of misordered packets when swapping between direct and indirect connections to subnets.

Analysts said Cisco's proposal is not a high priority

See Cisco, *page 62*

US WEST goes nationwide with network integration

BY BILL BURCH

Denver

US WEST, Inc. will take on its fellow Bell companies next year when its Interprise Network Services network integration subsidiary busts out of the carrier's home region and goes nationwide.

Interprise, based here, offers installation and operation of equipment such as hubs, routers and data service unit/channel service units and data transport via frame relay, Switched Multimegabit Data Service and other services.

Interprise will team up with as yet unnamed cable companies and competitive access providers (CAP) to offer service in 36 cities, according to Jerry Parrick, Interprise's marketing vice president.

If deals with CAP and cable partners are signed soon, as expected, Interprise should have service in four to six cities by year end; otherwise, operations will begin in the first quarter of next year.

The combination of integration expertise and local network facilities could make the company a contender, said Julie Schwartz, principal analyst of professional services at Dataquest, Inc. in Framingham, Mass.

"People are in need of networking skills, and US WEST has the credibility to deliver," Schwartz said.

Among users, Trish Rohner, a systems analyst with R.W. Beck in Seattle, said her company would probably stay with its current frame relay provider, WilTel.

Her company has leased private lines from US WEST, but Rohner is not ready to be one of the first users of the new Interprise service, and she is not confident of a cable network's reliability for local access.

For its national launch, Interprise plans to focus its initial efforts in the East, Parrick said. To cover that region, US WEST could end up as partners with CAP Time Warner Communications, the telephony services arm of Time Warner Entertainment.

US WEST owns 25% of Time Warner Entertainment, and Time Warner Communications is currently upgrading cable systems in a number of cities for telephony and data traffic.

A US WEST spokeswoman confirmed only that the carrier is talking to a number of potential partners.

The carrier will also soon have a toehold in Atlanta, thanks to US WEST's pending purchase of the Wometco Cable and Georgia Cable Television and Communications cable systems there.

A third partner could be Teleport Communications Group or another

See US WEST, *page 62*

TELECOM REFORM

Hollings presses on as support for bill nose-dives

BY DAVID ROHDE

Washington, D.C.

Users will continue to face an iron wall between long-distance and local carrier service for at least another year, following last Friday's death of telecommunications reform on Capitol Hill.

Senate Commerce Committee Chairman Ernest Hollings (D-S.C.) gave up an attempt to bring the Communications Act of 1994 to the Senate floor, despite its committee passage last month on an 18-2 vote.

Hollings folded his hand after Senate Minority Leader Bob Dole (R-Kan.) presented him with 11 pages of amendments on Thursday night. Dole's provisions would have dramatically eased regional Bell holding companies' entry into new markets while loosening the prerequisites for local competition.

Hollings' surrender is a body blow to the Federal Communications Commission, which repeatedly has suffered court reversals in its attempts to force competition. It potentially shifts power to state regulatory authorities, where some officials of competitive access providers have privately said they see a better shot of gaining regulatory parity.

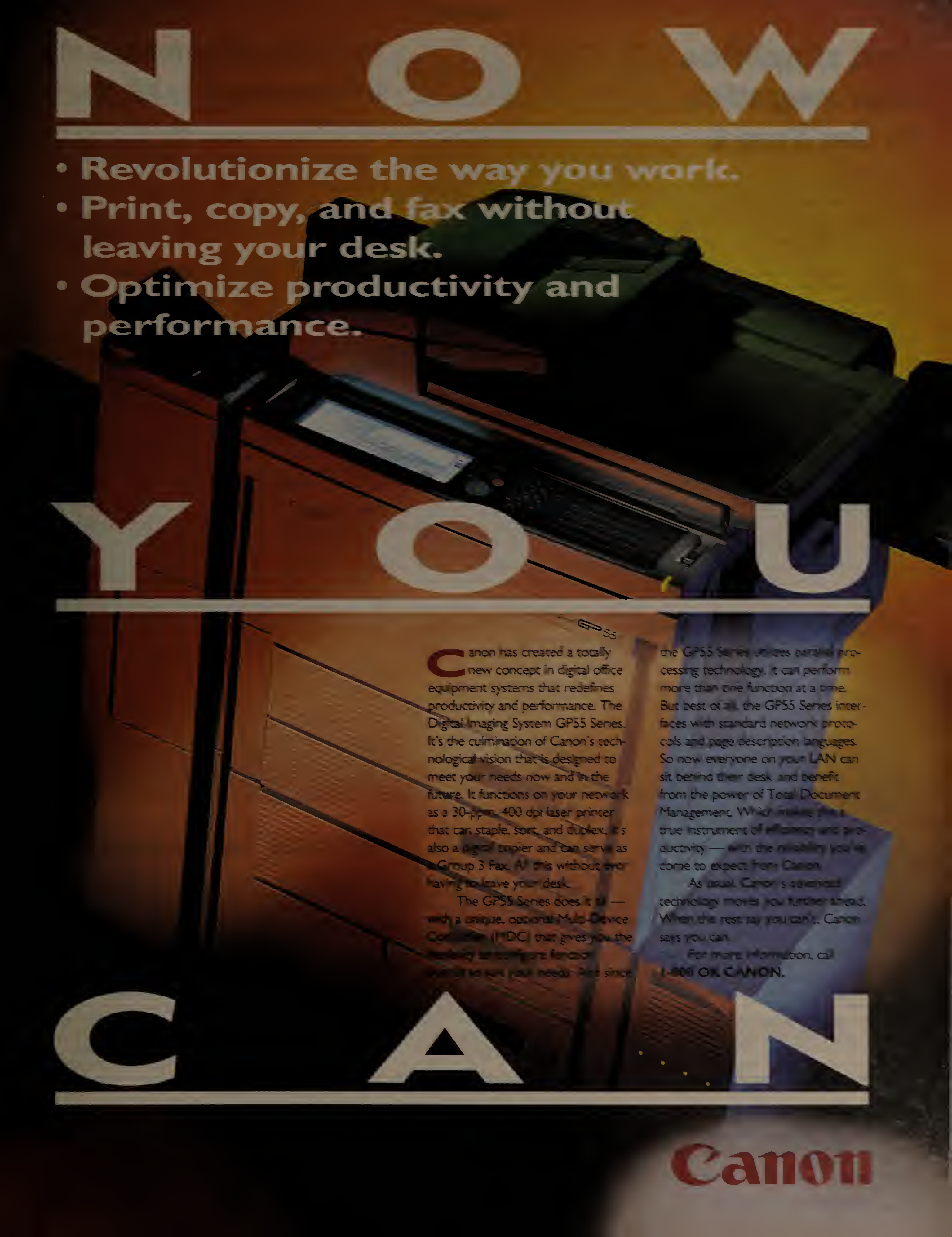
Sharon Nelson, chairman of the Washington state Utilities and Transportation Commission, told a Senate hearing last week that at least 80% of the states are moving toward local loop competition.

Dole and other Senate opponents of Hollings were

See Hollings, *page 61*

CORRECTION

A Sept. 19 article about the release of Oracle Corp.'s Cooperative Development Environment (page 4) stated the incorrect version number for that product. It is Version 2.0.



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Canon

Tool simplifies user migration to NetWare 4

BY JODI MARDESICH

West Haven, Conn.

Network managers waiting for Novell, Inc. to ship NetWare 4.1 before they take the NetWare Directory Services (NDS) plunge can test the waters sooner with a new directory management utility codeveloped by Novell and Preferred Systems, Inc.

Preferred Systems this week plans to announce the availability of DS Standard, a long-awaited Windows-based utility that simplifies the planning, installation and administration of NDS.

The product offers two of the three main benefits of NetWare 4.1: the ability to merge separately created directory trees, and to prune and graft branches of one directory tree onto another, said Jack Serfass, president of Preferred Systems, based here.

The fact that these capabilities have been lacking in NetWare 4.X has been a sore spot with network managers. Without them, it is a tedious, multistep process to make directory changes.

Novell also plans to launch a promotion whereby many users will get DS Standard for free, although the company has not yet determined the exact terms, said Jim Greene, product-line manager for NetWare server offerings.

"I think Novell should bundle it with NetWare," said Jamie Lewis, president of The Burton Group, a consultancy in Salt Lake City. "Even if customers aren't migrating to NetWare 4.X, they can use DS Standard to model changes to the directory and use it to automate those changes."

Announced last September, DS Standard is a Windows-based utility that discovers and draws a model of servers on a network, including NetWare 2.X and 3.X bindery-based servers, as well as previously installed NetWare 4.X servers. Network managers can use this model to plan the NetWare directory structure and streamline NetWare 4.X installation.

DS Standard includes the Assistant, an on-line database of information about NDS, including a description of Novell's corporate directory tree, suggestions for implementing a directory and some of 4.0 beta-user The Chase Manhattan Bank NA's experiences with NDS for reference.

When NetWare 4.1 ships, net managers will be able to merge two separately created directories via a

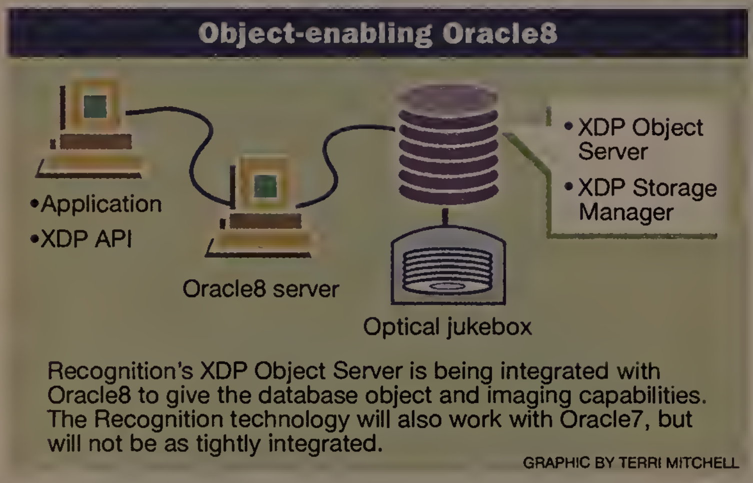
See **Migration**, *page 62*

Oracle database to get object support

BY BARB COLE AND KEVIN FOGARTY

Redwood Shores, Calif.

Users next week will get a preview of the object-oriented capabilities planned for Oracle Corp.'s next-generation database when Recognition International, Inc. announces a version of its object-based image management system designed to work with Oracle databases.



Recognition's XDP Object Server is being integrated with Oracle8 to give the database object and imaging capabilities. The Recognition technology will also work with Oracle7, but will not be as tightly integrated.

GRAPHIC BY TERRI MITCHELL

The Recognition technology, an object storage and management database, will initially run in parallel with the existing Oracle7 database. It will give users the ability to access both relational and object data from the same client.

The product also sets the stage for Oracle8, which will incorporate Recognition's technology much more tightly. While Oracle has said its next major database release would contain object-oriented features without giving up its relational database capabilities, it has been a mystery as to how Oracle would accomplish this.

Now at least part of the mystery is solved. The Recognition technology will serve as an adjunct to Oracle's core relational technology, said Dean Cruse, director for strategic marketing at Recognition.

Oracle officials declined to comment.

XDP for Oracle is a set of application program interfaces residing on top of Recognition's object-based imaging and workflow system that are designed specifically to work with Oracle databases. Recognition has a similar product that works with databases from Informix Software, Inc.

The APIs link Oracle databases with Recognition's XDP Object Server object database, which runs on a server, and Storage Manager, which controls the storage and management of images on an optical jukebox or other storage device. The client-based APIs give users of applications created with Oracle Cooperative Development tools access to data stored in both the imaging and relational database systems.

Oracle8 will actually contain the XDP for Oracle APIs, which will let the database link directly to XDP Object Server, Cruse said. Users will still need to install Storage Manager, he said.

The connection will let users access object-oriented as well as relational data from Oracle front ends, and will give Oracle8 the ability to backup, retrieve and add security to the Object Server database, Cruse said.

XDP for Oracle, will cost $795 per concurrent user, including all relevant server code.

The integration will be good for both Oracle and Recognition users by giving the database users object-oriented capability without disturbing their existing systems, and by giving imaging users the security, recovery and data management capabilities of a database, said Bob Larrivee, an analyst at BIS Strategic Decisions in Norwell, Mass. "This will make life simpler for Oracle users," he said.

Under the Oracle-Recognition alliance, users will also be able to integrate Recognition's workflow technology with Oracle databases, as well.

That's a good move since workflow is increasingly being seen as an extension of distributed databases, said Wayne Kernochan, an analyst at consultancy Aberdeen Group in Boston. "This agreement implies I don't have to buy a separate [workflow] software package to build large-scale workflow applications," he said.

Wayne Fowler, director of technology and network services at Toronto Stock Exchange in Toronto and an Oracle user, said, "It makes a lot of sense to integrate databases and workflow. We have a lot of information that would be valuable in a workflow environment, but the data is in Oracle. Hopefully, we'll be able to use this software with existing systems in which we're collecting data."

Agent-based communicator, services ready to hit market

BY JOANIE WEXLER

New York

Mobile users will gain an opportunity to dabble with personalized communications this week when Sony Electronics, Inc. and AT&T deliver the industry's first products and services based on General Magic, Inc.'s intelligent agent software.

Sony plans to unveil Wednesday its under-$1,000 Magic Link personal communicator, designed around messaging and paging capabilities, said sources close to the firm. It uses General Magic's Telescript agent software, as well as its Magic Cap graphical front end, which shields users from having to learn commands or use a keyboard.

Concurrently, AT&T will launch the initial, bare-bones iteration of its PersonaLink service, announced in January. PersonaLink is a network of hosts and databases that form an electronic community in which people will eventually conduct business, do research, tap into news reports and shop.

PERSONALINK

The PersonaLink network connects to AT&T's EasyLink net, which reaches millions of people on public and private messaging and fax systems worldwide.

AT&T will initially charge $9.95 per month for unlimited messaging, said spokeswoman Gail Silver. Prices for adjunct services, such as paging and fax, she said, are not included.

Silver foresees the PersonaLink monthly fee dropping to less than $5 but expects a usage charge to be added as other features, such as electronic shopping malls, emerge.

"We'd probably look at that very closely," said David Eisenlohr, vice president of telecommunications and computer operations at the Pacific Stock Exchange in San Francisco. "It sounds like the price is at the point where it won't scare people away."

Telescript agents in PersonaLink's first application — messaging — will watch for missives from individuals or about topics specified by the user. The system will identify, filter and notify mobile users of these messages, which users can adorn with music and icons.

MAGIC LINK

Sony's Magic Link, which weighs just over a pound, will have an integral modem for accessing PersonaLink via telephone lines, sources said. An infrared port will also come standard, through which users can control other infrared-equipped Sony devices such as televisions, VCRs and compact disc players, or communicate with other users in their line of sight.

Magic Link will contain one PCMCIA Type II slot, and the first accessory for it will be a paging adapter. Users with the adapter and a PersonaLink mailbox can receive short, filtered messages forwarded via the far-reaching SkyTel paging net.

Also optional will be a small cellular handset that plugs into a cellular jack on the device for voice communications. Two-way wireless data access into the PersonaLink net will follow, which Eisenlohr said is vital to the long-term viability of the communicators and services.

Kimball Brown, vice president of mobile computing at Dataquest, Inc., a research firm in San Jose, Calif., agreed. He suggested that narrowband personal communications services, for which licenses were recently auctioned off, would be a good choice for early two-way PersonaLink messaging access. The reasons are that the vendor community has agreed on one standard specification and the technology will be inexpensive.

NW hires test/reviews editor

Network World has signed on Lee Schlesinger to guide and expand its product test/reviews program.

MARK ESCHER

As test/reviews editor, Schlesinger will focus on increasing the quality and frequency of *NW's* product reviews, expand the stable of reviewers in the Network World Test Alliance and oversee the launch of the publication's first in-house test facility.

Schlesinger comes to *NW* following a stint as editor of *Enterprise Networking* magazine, which is published by the Association of Banyan Users International.

NW product reviews will continue to be performed by a mix of in-house personnel, members of the Network World Test Alliance and readers themselves who have expertise in a given area. If you're interested in becoming a free-lance reviewer, please send an E-mail message to Schlesinger via the Internet at lschlesi@world.std.com.

Vendors that are interested in having products reviewed can contact Schlesinger at the same E-mail address or at (508) 820-7416. *NW* also invites vendors to send products that are candidates for reviews directly to the lab at the address on our masthead.

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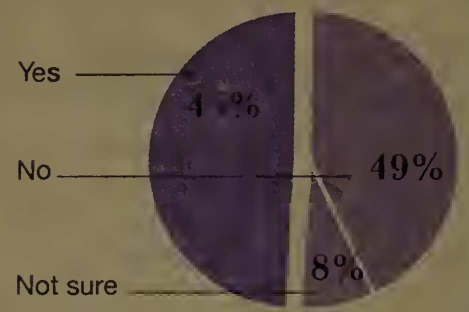
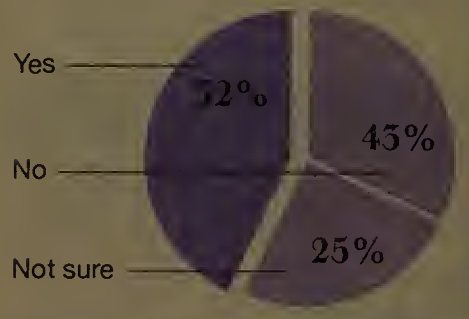
Getting a leg up

Does Microsoft use its power to establish standards to gain an unfair advantage over the competition?



Does Microsoft work closely enough with other vendors to develop specifications?



Based on a survey of 200 users.

Focus Data, Inc., an independent market research firm based in Framingham, Mass., conducted this research. For more information, contact Mona Dabbon at (508) 626-2556.

GRAPHIC BY SUSAN J. CHAMPENY

Microsoft

Continued from page 1

Nancy Colwell, vice president of marketing for development tool vendor Unify Corp.

Microsoft needs to become a more active participant in industry standards bodies, said Berl Hartman, vice president of strategic marketing at database vendor Sybase, Inc. When a Microsoft application program interface becomes a de facto standard, the company should turn it over to a standards body, which can continue to develop it according to the needs of vendors and users with heterogeneous networks, she said.

"They should also stop changing the standards every time you turn around," she said. "We're all marching down the same path and then Microsoft pulls the rug out from under us. They're trying to be the IBM of the '90s."

Microsoft should work as closely and cooperatively on the development of other technology as it did in the development of ODBC, said Doug Bayer, director of tools and technology development at Dun & Bradstreet Software.

Under the ODBC effort, Microsoft was the managing partner in a consortium, rather than the dictator of a standard, as was the case with OLE, he said.

Once ODBC was established, Microsoft stepped back and let other vendors and the SQL Access Group continue to develop it, Bayer said. This proved to be a good move since ODBC's success is dependent on its ability to let Windows-based front ends access non-Microsoft back ends, he said.

While many vendors would like to see Microsoft open up its standards efforts, those who have directly challenged the software giant have been burned.

A few years back, Borland International, Inc. set out to develop an ODBC alternative that it dubbed the Independent Database API (IDAPI). After about two years of watching ODBC gain industry support and become a de facto standard, Borland conceded and developed technology that lets IDAPI drivers work with ODBC.

Borland said it didn't lose an API war, but rather is simply supporting the standards that its customers want. Industry watchers, however, said Microsoft's ODBC effort sunk IDAPI.

In addition to participating in standards bodies, vendors want Microsoft to help them incorporate the company's protocols into their own products more quickly. Despite technical programs to assist ISVs, few companies can integrate their products with new Microsoft technology rapidly enough to compete with Microsoft's own applications.

"We're all marching down the same path and then Microsoft pulls the rug out from under us. They're trying to be the IBM of the '90s," Hartman said.

The effort to add support for some Microsoft specs, such as OLE 2.0, is unnecessarily difficult, vendors said. Microsoft could make implementing OLE 2.0 easier by introducing development tool kits for OLE or working with a third-party to develop such tools.

Microsoft does tend to provide good technical support to vendors trying to develop products that will link to Microsoft's own, said Len Fischer, president of Trax Softworks, Inc. This small groupware vendor is working with Microsoft on the development of Microsoft's Exchange groupware product.

"In cases where it's a new standard they're trying to push, they really go out of their way to help you," Fischer said.

But developing products that support one API for Microsoft users and something else for the rest of the world, costs a vendor time and money it could otherwise use to concentrate on its own new technology, Bayer said.

The irony for many vendors is that even though they devote countless resources to supporting Microsoft standards, Microsoft's own products usually have the first and best support for its APIs.

"OLE 2 has been out for a while, but the only products that effectively support it are coming out of Microsoft," said Rehan Syed, senior product marketing manager at Gupta Corp., a maker of application development and database tools.

"The API is a piece of paper. The value of that paper is the knowledge that went into making it. By nature of the fact that [Microsoft] wrote it, they have an advantage," Syed said.

In a survey of 200 network managers sponsored by *Network World*, 43% of respondents said Microsoft uses its power to set standards to gain an unfair advantage over competitors.

Microsoft executives said its only advantage is that it adopts its new technology faster than other vendors.

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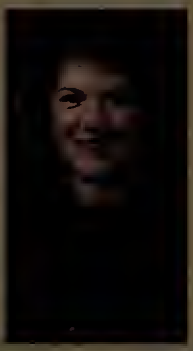
that gives Microsoft the potential for monopolistic behavior, Bayer said. So far, Microsoft has been fairly open and even-handed in the way it publishes its APIs, however, he said.

"It gets a little dicey from an antitrust position, if Microsoft starts setting standards in ways their applications have an unfair advantage. That puts other suppliers at a disadvantage, and in the long term, it's bad for customers," Bayer said.

"I hate being held hostage by these people, it makes me crazy."

Nancy Colwell, vice president of marketing, Unify



Microsoft makes every effort to get ISVs involved in developing new APIs, said Doug Henrich, director of the developer relations group at Microsoft. Microsoft changes APIs according to comments it receives from vendors enrolled in a formal, yearlong review process, he said.

More than a year ago, for example, Microsoft sent the specifications for OLE 2.0 to WordPerfect Corp. and Apple Computer, Inc., which both now back the competing OpenDoc.

WordPerfect "gave us pages of feedback on OLE, so did Apple," Henrich said. "We thought Apple would put OLE on the Mac. They didn't do it."

WINDOWS, WINDOWS, WINDOWS

Despite taking input from third parties, however, Microsoft controls the specifications. It tunes its technology for its own benefit, said ISVs, ultimately giving them no control over what comes out of Redmond.

Microsoft's primary commercial concern is keeping Windows viable and ubiquitous on the desktop, which leads to another gripe among ISVs — that Microsoft takes an approach to developing APIs that is too Windows-centric.

Colwell said Microsoft APIs such as OLE and ODBC work well, especially at the desktop. But they support mainly Windows and Windows NT applications, leaving vendors of Unix applications and tools out in the cold.

"You can't really criticize them for the Windows focus," said Bill Phelen, product manager at Progress Software Corp. in Bedford, Mass. "If there is a demand for these APIs on other platforms, it doesn't have to be Microsoft that solves that problem," he said.

Meanwhile, Microsoft does try to help other vendors support its standards in their products as long as those products have a large installed base with which Microsoft's applications will work, ISVs said.

"If NetWare can't run with something Microsoft is developing, that's going to be a serious issue," Fischer said. "If [Trax conferencing product] TeamTalk can't run with it, TeamTalk would just have to be changed."

Microsoft is listening to vendors' objections, and makes the concessions it thinks make for good business, said John Rymer, analyst with the Patricia Seybold Group in Boston.

"Microsoft listens to the market, and I'm afraid Microsoft believes the market more than it does theoretical arguments about how open a process is. What's real to Microsoft is dollars and cents," he said. "That doesn't go over well with a lot of technology people, but that's life."

LOOKING OUT FOR USERS

Microsoft has started to show some signs that it is listening to users and development partners. It recently announced it would make OLE work more closely with the Object Management Group's Common Object Request Broker standard, for example.

That's a start. But Microsoft should be working with others to produce similar broad-reaching interconnectivity standards in electronic mail, telephony, document management and other areas. Only then will Microsoft be considered a true participant in the multivendor network market.

➔ Senior Writer Adam Gaffin contributed to this story.

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MICROSOFT VIEWS

"People are going to become overly dependent on Microsoft like they were with IBM perhaps 10 or 20 years ago."

Doug Bayer, director of tools and technology, D&B Software

◆ ◆ ◆

"That is a problem for vendors, not a problem for users."

Survey respondent, when asked if Microsoft's ability to set de facto standards is a problem

◆ ◆ ◆

"Microsoft doesn't abuse its monopoly power. They do have that power, but I haven't seen illegal tie-ins and that kind of thing."

Len Fischer, president, Trax Softworks, Inc.

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"We're clearly in the driver's seat when we're delivering these APIs, but we want input. Standards bodies have some technology and almost all politics; our process is almost all technology with almost no politics."

Doug Henrich, director, developer relations group, Microsoft

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The Past, Present, and Future of Network Computing.

AT&T/McCaw merger could lower prices, spur innovation

BY JOANIE WEXLER

Washington, D.C.

Now that AT&T has completed its purchase of McCaw Cellular Communications, Inc., users and analysts anticipate tumbling cellular prices and innovative services from the combined powerhouse.

The final nod to AT&T's $12.6 billion acquisition of the cellular giant came last week from the Federal Communications Commission, following approvals earlier this year from the Department of Justice and U.S. District Court Judge Harold Greene.

AT&T Chairman Allen (above) and McCaw President Barksdale: The union of their companies will finally yield a national discount plan for cellular services.

AT&T and McCaw said they will set up a new company called AT&T Wireless Services, to be run by current McCaw President James Barksdale and the McCaw marketing team. The new company will eventually provide nationwide cellular service packages under the AT&T brand name.

Regulation requires McCaw to convert its 105 cross-country cellular systems to support equal access to the nets of all interested long-haul carriers. And until conversion is complete in a given market, AT&T is prohibited from bundling cellular services with its other network offerings there, and McCaw cannot use the AT&T name.

Barksdale estimated that it will take 18 months to convert all McCaw cellular systems, which cover only about a third of the U.S.

AT&T Chairman Robert Allen said the broadband personal communications services (PCS) spectrum auction, to commence Dec. 5, "is an option as we broaden our footprint."

However, AT&T can immediately begin selling some McCaw wireless services that are not subject to equal access legislation, such as paging.

Eventually, adding cellular to the mix "should drive down cellular costs," predicted Dan McFarland, general manager of the department of electricity and telecommunications for the city of San Francisco.

Analysts agreed. "All of a sudden, you can say you're giving AT&T a million dollars a month in long-distance business and demand cheap cellular rates," said Mark Langner, a senior consultant at TeleChoice, Inc., a consultancy in Verona, N.J.

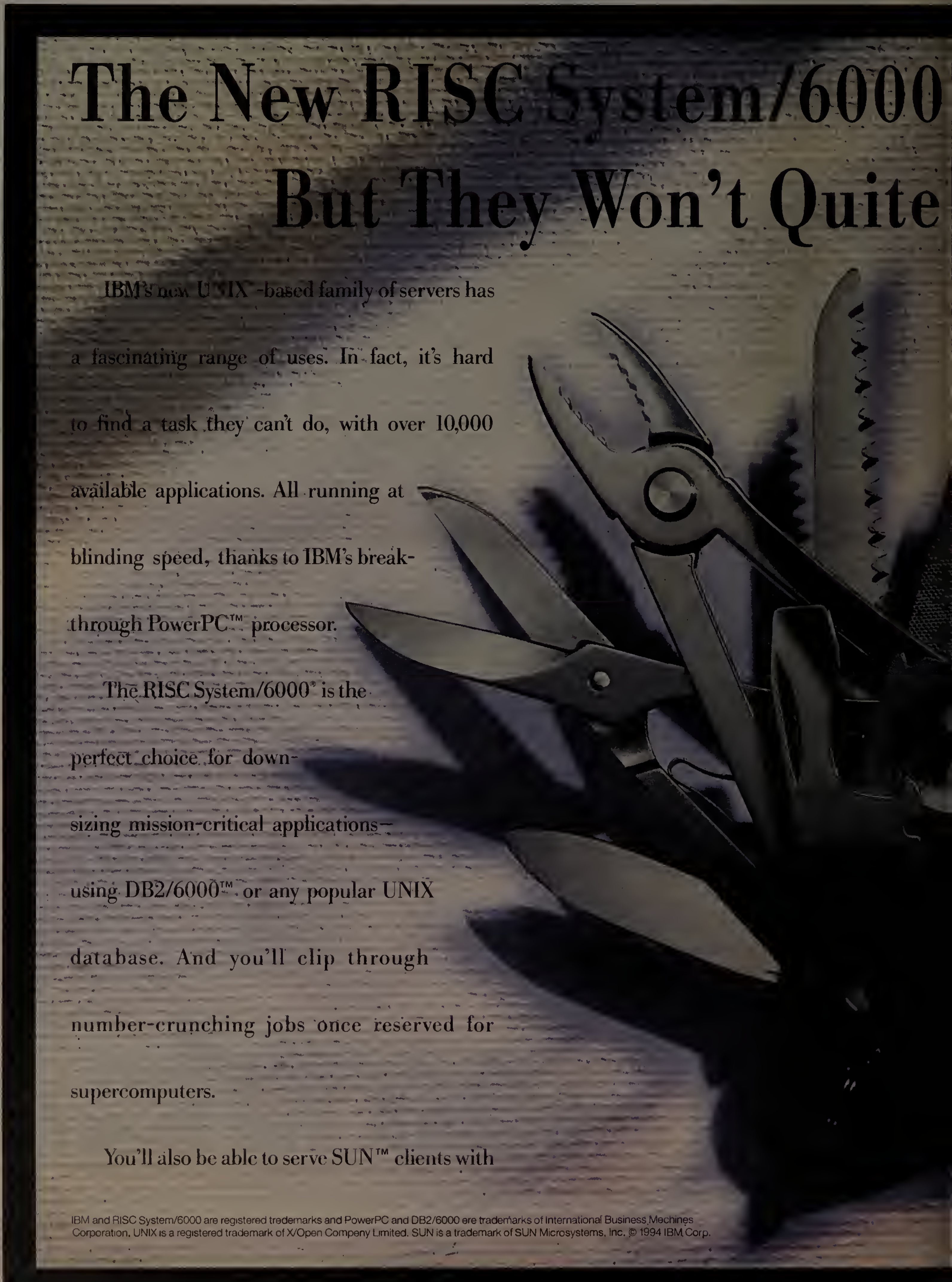
FMC Corp., a decentralized conglomerate, has not yet been inclined toward the centralized purchasing and management of cellular services. However, "we might be, if there were a compelling reason, such as huge cost savings," said Robert Keller, communications systems manager in the company's Dallas office.

Some observers are hopeful that AT&T and McCaw together will quickly provide services that neither can offer single-handedly.

At the Comdex/Fall show in Las Vegas this November, for example, AT&T will demonstrate a two-way paging service, due out one year from now, that leverages McCaw's two narrowband PCS licenses and McCaw-developed messaging applications, Barksdale said.

AT&T Wireless Services' agenda

1994	September	AT&T begins packaging McCaw paging services with other AT&T offerings.
1995	January	McCaw one-way alphanumeric paging service to take AT&T brand name; AT&T personal 500-number service to combine with McCaw paging capabilities.
	April	McCaw's Pacific Northwest territory to support IXC equal access. AT&T can bundle cellular services here with other AT&T offerings.
	September	Two-way paging service availability via McCaw narrowband PCS licenses. Services to incorporate McCaw- developed messaging applications.
1996	March	All McCaw markets to support equal access and use AT&T name. AT&T to bundle nationwide cellular services with its other offerings.



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The demo is a precursor to AT&T plans to package its Goldalyst personal computers with McCaw's MessageFlash and MailFlash software.

MessageFlash allows a PC user to directly send a message to a user's pager; MailFlash connects the user's LAN E-mail system to the pager and forwards notifications of those messages to the user, a McCaw spokesman explained.

The formation of AT&T Wireless Services could also inspire other carriers to get on the stick with competitive services. Sprint Cellular, for instance, is in consolidation discussions with multiple cellular entities for erecting its nationwide wireless network, which the company expects to reach nearly anywhere in the country by late 1998.

The disgruntled faction remains the regional Bell holding companies, which have cellular subsidiaries and deem the AT&T/McCaw union anticompetitive. Bell Atlantic Corp. and NYNEX Corp., which recently merged their cellular subsidiaries, have filed an antitrust suit that will go to trial Nov. 1.

Allen said the chances are so small of that action causing a stumbling block that "it's not worth a contingency plan."

E-mail monitoring specs on the way from the EMA

BY ADAM GAFFIN

Los Gatos, Calif.

The Electronic Messaging Association (EMA) hopes to give users a Christmas present this year: specifications for monitoring heterogeneous messaging networks.

Due by year end, the specs would focus on monitoring the health of mail gateways and routers, as well as create a mechanism for tracking individual messages as they travel across a network, according to Sara Radicati, chairwoman of the EMA's Messaging Management Committee.

The bulk of the work is being done by a vendor technical committee that has been meeting for several months. However, the entire committee includes users, as well.

Management has grown increasingly important for electronic mail administrators as they build enterprise nets out of proprietary packages — especially if they then try to layer applications such as workflow and groupware atop them.

The committee includes representatives from all of the major E-mail vendors, such as Lotus Development Corp. and Microsoft Corp. And they have pledged to work to incorporate the specifications into their applications, possibly as soon as a few months after the specs are published, Radicati said.

The proposed standards, which were the subject of a two-day meeting here last week, will incorporate support for centralized monitoring of message routers and transfer agents. Support for the standards will let net administrators track such information as the number of queued messages and the age of the oldest message at these devices.

The proposed standards will incorporate support for centralized monitoring of message routers and transfer agents.

The committee will also write specs for tracking individual messages, said Radicati, who added that a significant part of this effort will be trying to develop standards for following message file attachments across a network. She said that when a file attachment is lost or mangled today, it is often difficult to figure out where in the system this happened.

The EMA's work builds on that done by the Internet Engineering Task Force in developing a Mail and Directory Management (MADMAN) Management Information Base for incorporating messaging oversight into the Simple Network Management Protocol. The EMA document will also address X.400 routers, which have more complex rules for moving mail than the Simple Mail Transfer Protocol routers addressed in MADMAN.

Scott Barker, who oversees a 20,000-node E-mail network at the University of North Carolina at Chapel Hill, said he would welcome better tools for monitoring gateways between his Internet-based and Novell, Inc. NetWare mail systems, which is where the bulk of the problems happen. Although the university has a simple polling system for determining whether gateways are running, most of the time, he finds out about problems "when somebody calls and says their mail isn't getting through."

Radicati said that once the monitoring specs are complete, the committee will look at possible standards for more active management of heterogeneous messaging nets.

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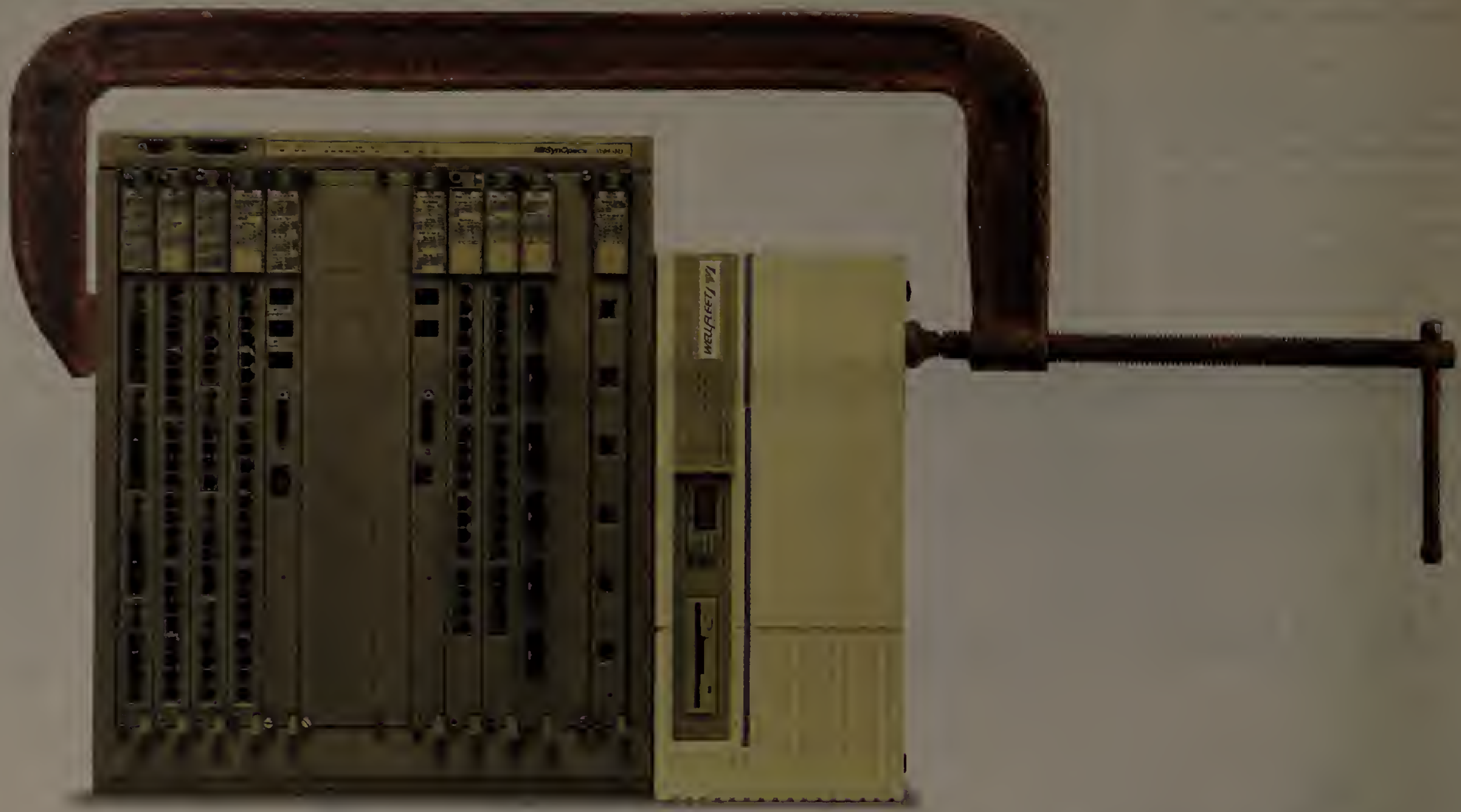

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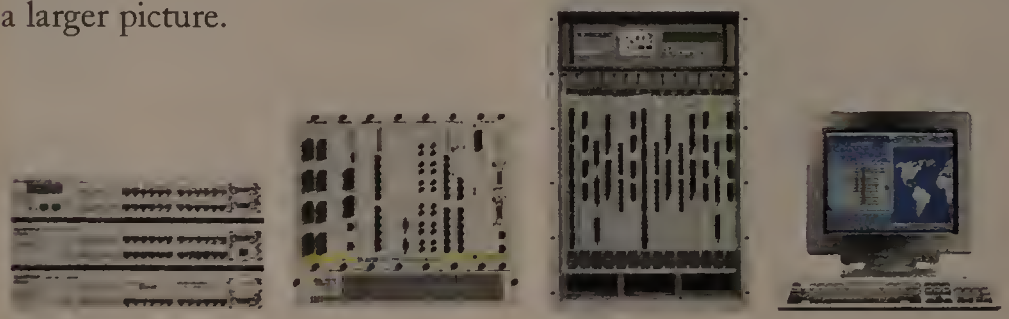

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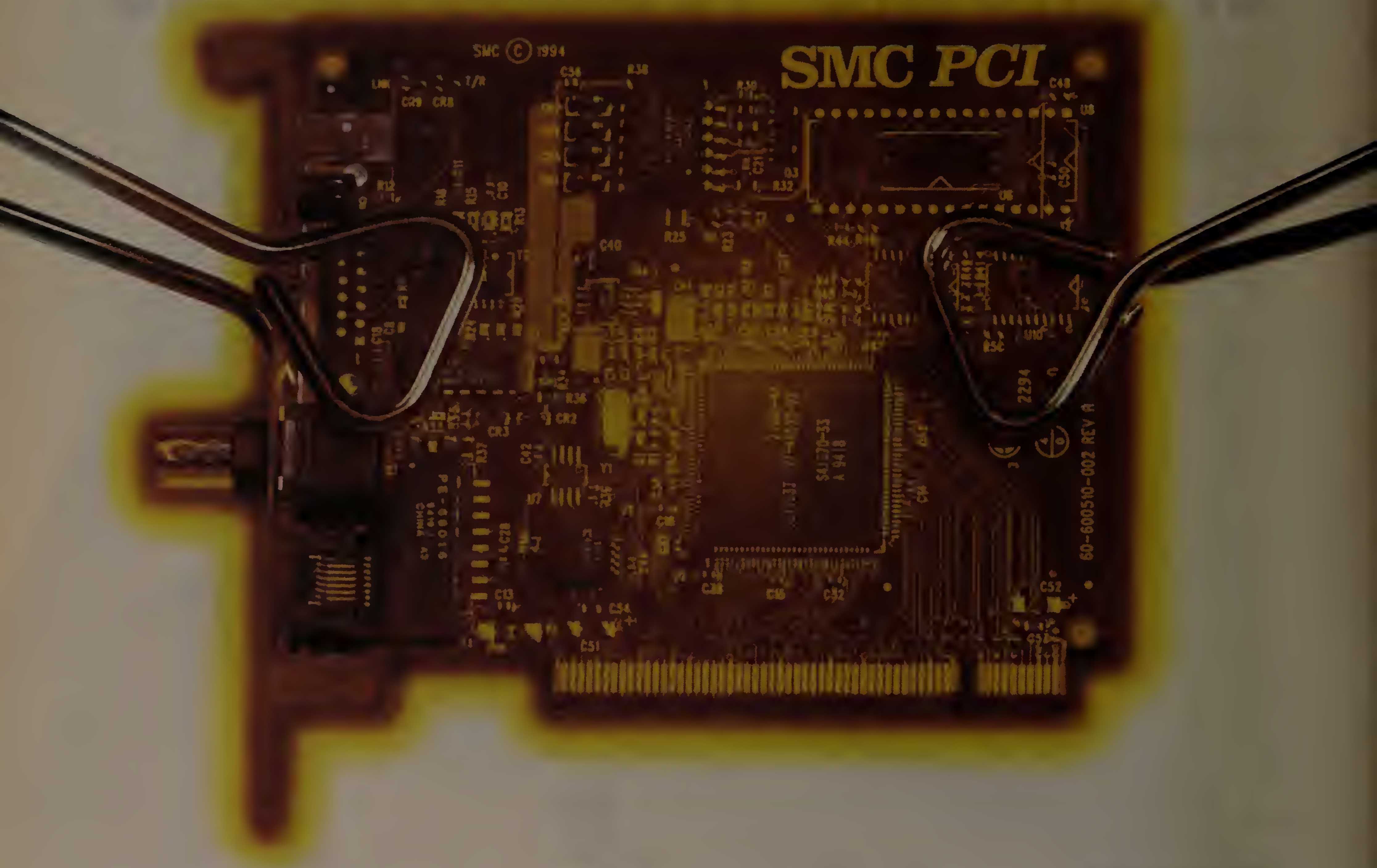

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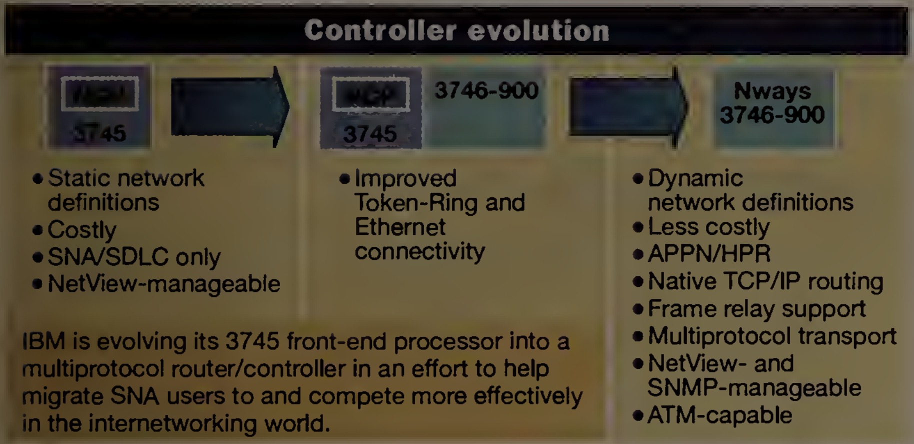


IBM is evolving its 3745 front-end processor into a multiprotocol router/controller in an effort to help migrate SNA users to and compete more effectively in the internetworking world.

Nways seen as cornerstone of IBM's future enterprise nets

BY MICHAEL COONEY

Rarely, if ever, has a single piece of communications hardware been saddled with the burden of carrying a company's entire installed base of users onto new backbone technologies as has IBM's Nways 3746 Model 900.

Designed as an expansion unit for IBM's maturing 3745 front-end processor, the 3746 has recently taken on new strategic purposes. It now is a key part of IBM's strategy for migrating Systems Network Architecture users from hierarchical net designs to Advanced Peer-to-Peer Networking, without trashing their existing 3745s, and for helping them build multiprotocol backbones without moving to mainframe channel-attached routers (*NW*, Sept. 12, page 1).

"The 3746-900 will support everything current SNA users need to migrate their networks to APPN or multiprotocol environments," promised Rick McGee, director of IBM's controller lines. "We are extending our reach far beyond SNA."

A version of the 3746-900 that bolts onto existing 3745s is already available, while the new stand-alone Nways model will ship by the middle of 1995.

Physically, the box is a 10-slot switch with an Intel Corp. 80486 processor operating each slot. Those chips, combined with the box's central processor, increase the throughput of the box by as much as 70% compared to existing 3745 models, according to IBM.

The slots can be configured to support a variety of interfaces, from as many as 10 Enterprise System Connectivity channels to 20 Token-Ring LANs or 600 64K bit/sec lines. It can also support as many as 20 T-1/E-1 lines or 160 256K bit/sec lines.

The box runs an as yet unnamed software package that switches data traffic coming into it from one adapter to another and then sends it on to its destination.

This switching architecture will help 3746-900 users migrate to high-speed networks. For example, the 3746-900 already supports frame relay connections, and sometime in 1996 it will get an Asynchronous Transfer Mode interface that can plug into one slot. Users will then be able to use the box to switch incoming frame relay traffic out over an ATM net.

The forthcoming Nways 3746-900 will also feature support for APPN Network Node, which will let it become a full peer in APPN nets.

In early 1996, the box will get APPN's High Performance Routing (HPR) features. HPR adds the ability to route data around net failures and delivers better performance, improved data flow control and new class-of-service features for APPN nets.

The box will also support dependent LU Requestor functions that will let it grant 3270 devices in an APPN net access to mainframe resources.

For those users looking to build multiprotocol backbones based on TCP/IP, IBM will add native TCP/IP routing features to the 3746-900. According to IBM documentation, the 3746-900 will support the Open Shortest Path First and Routing Information Protocol requirements first.

"We see no reason for SNA users to throw out technology they know in favor of a technology [routers] that they don't know," McGee said.

To grab as many migrating SNA users as possible, Cisco Systems, Inc. earlier this year licensed bus-and-tag and Enterprise Systems Connection channel technology for its router line from IBM's mainframe division.

"With the 3746-900, IBM is marrying the best of SNA with TCP/IP and putting it in one place that it hopes users will want," said Frank Dzubeck, president of the Communications Network Architecture, Inc. consultancy in Washington, D.C.

©IBM: (919) 254-4957.

NETWORK MANAGEMENT

ISICAD recasts Command into modular, scalable product suite

BY JIM DUFFY

Anaheim, Calif.

ISICAD, Inc. later this year will unveil a revamped version of its Command physical net management system that lets users keep track of more network assets and easily report on moves, adds and changes.

The new version of Command will be packaged as a modular suite of scalable software products that offers connectivity and asset management from the wiring closet to the WAN and out to remote offices. This is in contrast to previous versions of Command, a single software product for mapping physical network connectivity on customer premises.

"This is a dramatic step forward in the whole ease of use equation," said Mike Upp, vice president of sales and marketing for ISICAD. "It makes Command applicable to the enterprise, not just to the network manager."

The six components of Command that will ship before the end of the year are Equipment Manager, Connectivity Manager, WAN Manager, Desktop Access, Info Manager and Report Works.

Command Equipment Manager runs on a Unix workstation and is the base product on which the other modules depend. It allows users to document their networks and track the physical relationships between network devices spread across the enterprise.

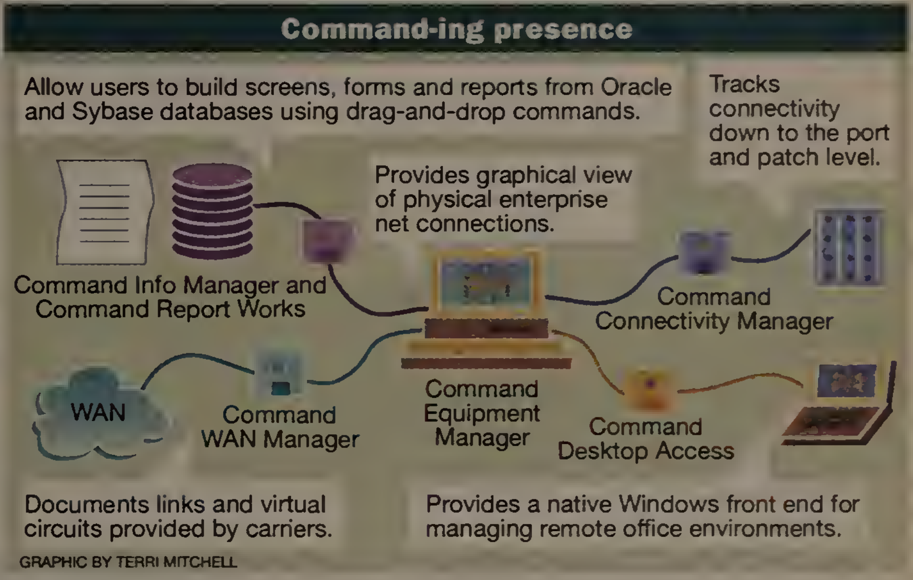
Equipment Manager provides a complete graphical representation of enterprisewide physical connectivity. The component includes a feature called Move Manager that automates moves, adds and changes through rules-based processes that can be invoked using point-and-click commands.

Connectivity Manager allows users to detail physical connectivity down to the port and patch level. WAN Manager is a previously announced feature of Command that started shipping this quarter. It allows users to document virtual connectivity across the enterprise so they can track bandwidth allocation and utilization, service levels from their carriers, and what services and applications are provided by or depend on a particular circuit.

Desktop Access provides a native Windows front end for managing remote office environments. It allows users to access remote, Unix-based Command servers without requiring X Window System terminal emulation.

See ISICAD, *page 16*

Command-ing presence


Command Info Manager and Command Report Works
Command Connectivity Manager
WAN
Command WAN Manager
Command Equipment Manager
Command Desktop Access

Allow users to build screens, forms and reports from Oracle and Sybase databases using drag-and-drop commands.

Tracks connectivity down to the port and patch level.

Provides graphical view of physical enterprise net connections.

Documents links and virtual circuits provided by carriers.

Provides a native Windows front end for managing remote office environments.

GRAPHIC BY TERRI MITCHELL

BRIEFS

Hewlett-Packard Co. and **InSoft, Inc.** last week announced that they will codevelop an H.261-based **desktop videoconferencing** product for the HP 9000 Series 700 workstations for release by mid-1995. InSoft also said it will ship early next year a Windows-based H.261 version of its Communique desktop video product that will work with the HP desktop video products.

For a limited time, users can purchase all operating system software, LAN features and memory modules for the **3174 controller** at a 60% **discount.** Included are Token-Ring and Ethernet adapters, as well as Configuration Support C, Advanced Peer-to-Peer Network and frame relay support features. Orders must be placed by Jan. 31, 1995, and installation must occur before April 14, 1995.

IBM also announced that the 3174 module for its 8250 and 8260 intelligent hubs is now available for $10,500, reduced from $12,990.

IBM: (800) 426-2255.

Ki Networks, Inc. is now offering scaled-down versions of its **DECnet** net management software.

Version 3.0 of DEC Network Manager is now packaged as four separate software modules designed to address specific management requirements. The four modules are DECnet Automated Response and Profile Center (ARPC), Local Area Transport (LAT) ARPC, DECnet Node Manager and LAT Node Manager.

The ARPC packages profile DECnet and LAT networks, as well as automate responses to events in those environments. The Node Manager products provide full DECnet and LAT management capabilities from Hewlett-Packard Co.'s HP OpenView or IBM's NetView for AIX platforms.

Both ARPC packages cost $7,500 each, and both Node Manager modules cost $15,000 apiece. The products will be available in October.

Ki Networks: (410) 290-0355.

SYSTEMS MANAGEMENT

LEGENT brings distributed management to another level

BY JIM DUFFY

Atlanta

LEGENT Corp. has unveiled software that allows users to incrementally add distributed management capabilities to their networked systems.

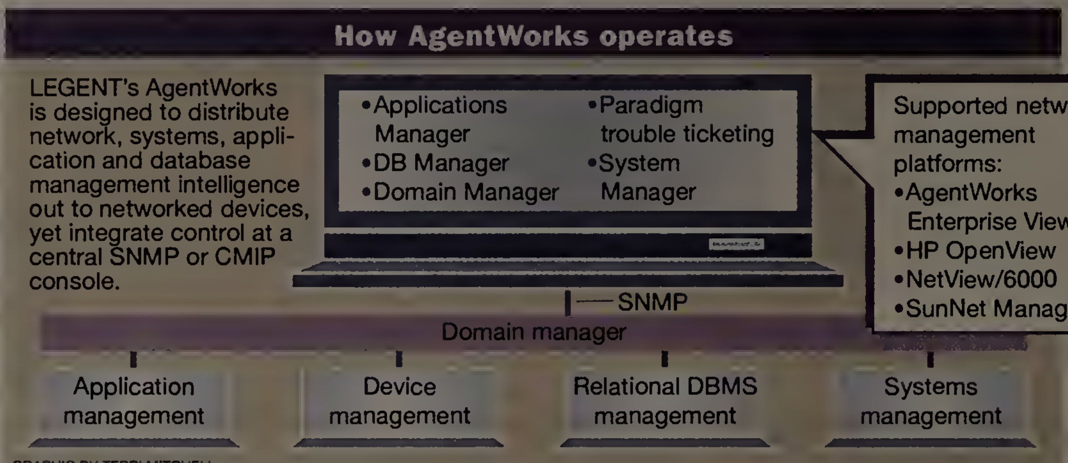
Called AgentWorks, the software includes agents that monitor networks, systems, applications and databases, and a set of applications to manage the environment using information from those agents. The products are packaged such that users can pick the components they need and add capabilities over time.

AgentWorks agents run on Sun Microsystems, Inc., IBM and Hewlett-Packard Co. workstations, and systems running The Santa Cruz Operation, Inc.'s SCO Unix operating system. The applications work with Sun's SunNet Manager, HP's OpenView and IBM's NetView for AIX — formerly NetView/6000 — management platforms, and with a new LEGENT system called AgentWorks Enterprise View.

AgentWorks also supports the Simple Network Management Protocol and the Common Management Information Protocol.

The application components of AgentWorks are System Manager, Domain Manager, Agent Factory, DB Manager, Enterprise View and Agent Manager. System Manager allows users to compare system attributes to predefined thresholds and alert administrators when thresholds are exceeded.

How AgentWorks operates



LEGENT's AgentWorks is designed to distribute network, systems, application and database management intelligence out to networked devices, yet integrate control at a central SNMP or CMIP console.

GRAPHIC BY TERRI MITCHELL

Domain Manager allows networked elements to be configured into local domains, which enhances scalability. It correlates distributed systems events and initiates corrective action locally, instead of sending each alert up to the central console.

Agent Factory, meanwhile, is a software development tool kit that lets users quickly write SNMP agent code for managed objects, even if they aren't familiar with the protocol.

DB Manager performs fault, configuration, performance and file management of distributed databases. It now supports only Oracle Corp. databases, but management of Sybase, Inc. databases is planned for the future.

Enterprise View serves as a central console for controlling AgentWorks-equipped resources. It uses an ISAM-based repository for storage of management data, supports autodiscovery of AgentWorks nodes and has a map editor for representing managed objects.

The last component, Agent Manager, lets managers monitor and control the agents deployed throughout the network. It enables users to distribute agent software to systems and devices, and discover them when booting up the management system.

AgentWorks is based on technology from Digital Analysis Corp., which LEGENT acquired last month, and the Mercury project LEGENT is involved in with IBM. IBM will also be a competitor of LEGENT's in the management agent space, as will HP, Computer Associates International, Inc., Tivoli Systems, Inc. and others, analysts said.

"Frameworks are one level of competition between these guys," said Barbara Sannerud, program director at Gartner Group, Inc. in Stamford, Conn. "The framework is only as good as the quality and intensity of the information it can collect from distributed agents."

Pricing starts at $5,000 for System Manager and DB Manager applications, $10,000 for the Agent Factory and $12,000 for Enterprise View. Domain Manager is free of charge.

Pricing for agent software starts at $100 per agent for Agent Factory, $200 for DB Manager, $300 for System Manager and $400 for Domain Manager. All the agents will be available by year end.

Pricing for Agent Manager has not been determined yet.

©LEGENT: (703) 708-3564.

ISICAD

Continued from page 15

"All of our field-support people have laptops," said Duane Butler, SABREnet product manager at American Airlines, Inc. in Fort Worth, Texas. "They will be able to verify installation accuracy on-line instead of through a telephone call or paper. There should be some efficiencies gained there."

Info Manager is an object-oriented database front end that allows users to build screens, forms and reports with data from Oracle Corp. and Sybase, Inc. databases without writing fourth-generation language code. It is intended to replace Oracle's Oracle Forms and Sybase's Accell SQL database front ends, thereby giving users a consistent database interface across platforms.

Report Works works with Info Manager. It provides ad hoc report generation for times when numerous reports need to be created on specific network devices or events.

"It makes the database administration task easier," said Command user Michael Ritchken, group vice president of Electronic Systems Association in New York. "It now gives users the ability to get their hands on information in a way that previously was not available unless you were familiar with writing SQL [commands]."

Analysts were most impressed with Info Manager and Report Works.

"The database access and reporting stuff is a significant jump forward in terms of being able to generate reports and access multiple databases with a simple graphical front end," said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo. "I think they got a winner on that."

Command Equipment Manager costs $12,000, while Connectivity Manager costs $5,000. WAN Manager is priced at $4,500, and pricing for Info Manager has yet to be determined. Report Works comes bundled with the Equipment Manager license, but additional licenses can be acquired at $4,000 per five users. Desktop Access costs $8,500 per client.

©ISICAD: (714) 533-8910.

Megahertz server employs credit card modems

BY MICHAEL CSENGER

Salt Lake City

Organizations considering remote LAN access for mobile or telecommuting workers now have a flexible, PCMCIA-based option to consider from Megahertz Corp.

Showcased at the recent NetWorld+Interop show in Atlanta, the Megahertz MobileLAN remote access server holds up to eight PCMCIA Type II modems and lets remote users dial in to network resources at their central site. The server's PCMCIA modems will work with other PCMCIA modems or any standard modems on the remote client side.

Megahertz is the first vendor to announce such a system for personal computer-based clients. Dayna Communications, Inc., also based here, introduced its DaynaLink server last May, with support for AppleTalk LANs and Macintosh clients.

DIAL-UP ACCESS

The MobileLAN server gives PC clients dial-up access to IP and IPX-based Ethernet LANs. It is Simple Network Management Protocol-manageable and provides Password Authentication Protocol and Challenge Handshake Authentication Protocol security features.

Megahertz joins a slew of vendors entering the remote access server market, in this case, bringing with it the flexibility of PCMCIA modems that are the mainstay of its business.

According to the company, users will appreciate the ease of upgrades that PCMCIA modems afford. When users need to change a modem on the server, they can simply pull out a card and insert a new one. Other servers, using internal modems, require a shutdown and screwdriver as users have to open the box for maintenance. External, rack-mountable modem solutions require more physical space and present cable management chores.

One network manager for a large investment firm whose corporate policies do not allow him to be identified said he has already deployed PCMCIA modems and would like to test the Megahertz server.

"We have a server in place but are looking for something that's more adaptable to changes," he said. "We now use rack-mountable modems, and if I want to upgrade one or two, I have to change the whole rack. I can't selectively upgrade just a couple of them to higher speeds, and the cabling [from the rack to the server] is a hassle."

Added Maribel Howard, a data communications research analyst at International Data Corp. in Framingham, Mass., "If [users] have an installed base of PCMCIA modems, then this server concept is easy to appreciate. But if you've always gone with internal modems and don't mind opening the server when you have to, then the attraction to PCMCIA isn't so obvious."

There are some caveats about PCMCIA modems. They generally cost about $150 more than their internal counterparts. "And it also takes a while for technology to get ported to the PCMCIA level," said Rebecca Thompson, an industry analyst at Dataquest, Inc. in San Jose, Calif. "It's a function of their form factor. The latest and greatest modem technologies always make it to PCMCIA modems last."

The MobileLAN server supports remote node and remote control dial-up sessions. It is compatible with Megahertz and several other vendors' 14.4K bit/sec modems, and includes automatic configuration scripts for easier installation.

The firm will provide an upgrade to support 28.8K bit/sec V.34 modems, and also announced pricing and availability for its own V.34-based PCMCIA modems. Due on Oct. 28, the Megahertz V.34 modems will cost $499. Two models will be offered, either with or without Megahertz's unique X-Jack feature, which eliminates the need for a separate phone-line adapter.

The MobileLAN server will be available in the fourth quarter this year for $3,299, or $5,691 with eight 14.4K bit/sec modems.

©Megahertz: (801) 272-6000.

Reality ☑ Check

Product: MobileLAN
Company: Megahertz Corp.

The benefits:
- Remote LAN access server holds as many as 8 PCMCIA modems.
- PCMCIA modems allow simple upgrade or swap-out.
- Smaller footprint and easier maintenance compared to internal or rack-mountable modems.

The drawbacks:
- PCMCIA modems cost more than comparable standard models.
- Modem technology filters down to PCMCIA class last.
- Lost investment in installed base of internal and external modem servers.

The user view:
“We've had a lot of interface hardware problems – defective cards and slots – with our laptop PCMCIA modems. It's not a very rugged piece of gear. But if you're just leaving it in the server and not banging it around in a laptop, I suppose you could get around that problem.”

Bill Garfield, network communications specialist, Panhandle Eastern Corp.

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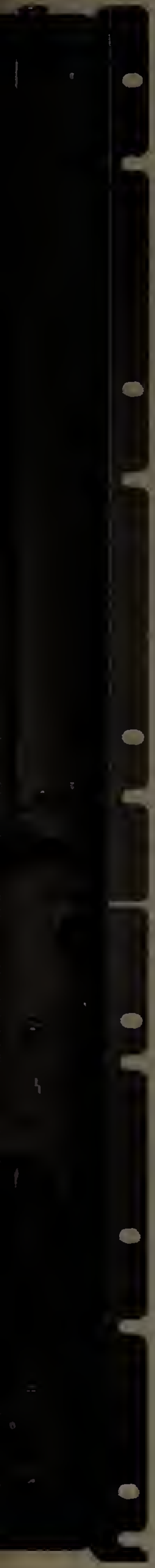

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DIGITAL KNOWS NETWORKS

Georgia Tech goes for the gold with Newbridge ATM

BY MICHAEL CSENGER

Atlanta

In dealing with Asynchronous Transfer Mode, Atlanta's Georgia Institute of Technology multimedia researchers face the same progressive dichotomy that visitors to Atlanta's NetWorld+Interop trade show experienced earlier this month.

While stranded in taxi lines and otherwise stymied by a civic infrastructure apparently overwhelmed by one three-day trade show, visitors marveled that Atlanta would soon be hosting the 1996 Olympic Games.

"How do they expect to handle it?" visitors asked. "There aren't enough streets in this town."

Georgia Tech can take part of the credit for attracting the Olympic Games in the first place. The Georgia Center for Advanced Telecommunications Technology (GCATT) developed ATM-based multimedia applications that depicted the city's Olympic plans. The applications played a key role in winning over the committee that selected the site for the '96 Summer Games.

GCATT's Multimedia Technology Lab found that it could not rely on Georgia Tech's Fiber Distributed Data Interface-based campus network to supply the bandwidth for its application development.

"Just two of our Sun SPARC 10 workstations will bring FDDI to its knees," said Frederick Dyer, GCATT's associate director and vice president for multimedia.

So GCATT turned to ATM. Last February, Dyer's group installed three 36150 MainStreet ATMnet switches from Newbridge Networks, Inc. The switches, which are tied together via OC-3 links, serve as the core of GCATT's Experimental Network (XNET).

The 36150s have video, Ethernet and channelized T-1 interfaces, and also support several ATM workstations over local OC-3 fiber links.

GCATT's XNET provides the bandwidth needed for its multimedia development. It is attached to Georgia Tech's campus FDDI backbone through a Cisco System, Inc. Cisco 7000 router with an ATM interface, but XNET operates autonomously.

About one month ago, GCATT deployed Newbridge's first Vivid ATM Workgroup Switch, a beta unit that will off-load ATM workgroup connectivity from the core 36150s.

Dyer said the Workgroup Switch installation went smoothly and has operated as promised. "We had it up and running in a day," he said.

The Workgroup Switch provides 12 OC-3 interfaces for locally attached workstations equipped with ATM network interface cards. Dyer's group has connected only one workstation to the switch for initial evaluations and will later add those that are still connected to the 36150s.

Dyer said that by the middle of next year he expects GCATT to have a complete Vivid infrastructure, using the Route Server and Yellow Ridge to bring Ethernet onto the ATM net. GCATT will also upgrade its backbone to Newbridge's new core switch, the 36170 MainStreet ATMnet, as those products are delivered.

The GCATT ATM net will serve as a model for Georgia Tech's campus network if the managers of that network are convinced to let this happen. The idea is to use Newbridge 12.8G bit/sec 36170s as a campus backbone, replacing the three FDDI rings that now support about 9,600 end nodes across the campus.

"We may even go larger than the 36170," said Randy Abler, the research engineer in charge of GCATT's ATM network. "We've talked to AT&T about possibly using their GCNS 2000," a 20G bit/sec carrier switch, scalable to hundreds of gigabits, that is now called the GlobeView 2000 Broadband System.

> **"Other vendors are pushing for LAN emulation based on bridging technology. But we found five years ago that bridging just doesn't scale well in large networks," Abler said.**

"You'd be surprised how much our connectivity and bandwidth needs will grow," Abler said. Current applications as seemingly innocuous as Mosaic are already burdening the FDDI backbone, and Abler has calculated that Georgia Tech will require 40G bit/sec capacity in about five years.

Based on its experience, GCATT believes in the ATM/routing approach of both Vivid and CiscoFusion.

"Other vendors are pushing for LAN emulation based on bridging technology," Abler said. "But we found five years ago that bridging just doesn't scale well in large networks.

"We've spent five years building a routed network, and we're not about to undo it all with a bridging-based ATM backbone," Abler said.

ATM DOLLARS

The advanced applications that GCATT develops will also drive those needs. GCATT demonstrated two such applications at the NetWorld+Interop show, in conjunction with BellSouth Corp. Visitors at the BellSouth booth had their golf swings digitally analyzed over an ATM link to GCATT's Silicon Graphics, Inc. Onyx video server located at Georgia Tech.

Another demonstration showed a telemedicine application for eye surgery. Users wielded a virtual scalpel on a screen display of a human eyeball, as workstations linked to the Silicon server computed and rendered the generally ugly results.

Dyer said his group is developing a tactile feedback mechanism for the virtual surgery application. "Doctors have to be able to feel the patient, so we're working on that now."

GCATT is also part of the Georgia Research Alliance, whose activities include projects to further Georgia's economic development.

Georgia seduced the 1996 Olympic Committee with a multimedia display that Dyer directed. The display uses three large, wrap-around television projection screens to show a panorama of Atlanta with proposed Olympic stadiums added as special effects.

Composed of 3,500 individual slides shot from a helicopter and then digitally melded together, the panorama is controlled by a trackball. The view can be spun around to show the whole city, letting users also zoom in on different Olympic venues.

Dyer said that many such video booths are planned for the games, helping visitors get the lay of the land while tracking the events held at each location.

Such video applications — and similar ones designed to help corporations find potential office or factory sites around Georgia — are already feasible without ATM.

"We're looking at four video feeds and two to four data feeds," Dyer said. "It's possible now, but with ATM, it becomes a much easier prospect. Switched bandwidth is the issue; we want to be able to feed this to a remote site anywhere."

So GCATT's work serves as an ATM portal for both Georgia Tech and the state of Georgia, as well. The university's network manager is a conservative man not about to risk radical technology deployments, Dyer said, while the Georgia Research Alliance depends entirely on real-world results for its funding.

"We try to make people find this technology useful," Dyer said. "When they do, they will adopt it."

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SkyTel card gets paging net down to business

BY ELLEN MESSMER

SkyTel Corp. last week introduced SkyCard, a PCMCIA card designed to let laptop computers receive E-mail and spreadsheet data over SkyTel's paging network.

Aimed at business travelers such as sales or field support personnel, SkyCard includes Windows-based software that lets users automatically incorporate data received wirelessly into any laptop application supporting Microsoft Corp.'s Dynamic Data Exchange interface.

Although SkyTel's one-way paging service can only support a single message of as many as 240 characters in length, the SkyCard can take multiple paging messages and reassemble them into a single file. SkyCard, a Version 2 PCMCIA card, can store a maximum of about 60 pages.

SkyCard is intended to "integrate the ubiquity of wireless messaging with the power of computing," said Douglas Brackbill, vice president of the Advanced Applications Group at SkyTel's parent company, MTEL Corp.

Analysts said SkyCard gives corporations a way to deliver information to an entire sales force or field-service operation at once via SkyTel's satellite-based paging network.

"It's an important step in mobile communications for professionals because it gives companies the ability to broadcast information out to people in the field," said Joyce Gavenda, an analyst with Boston-based research firm Summit Strategies, Inc.

Information received wirelessly can be viewed in designated SkyCard folders or all messages can be viewed from one in-box.

Information updates can also be routed to applications like calendars, databases or word-processing documents.

The SkyCard software contains ready-made templates for Microsoft's Excel spreadsheet and Microsoft Word so that stock quotes or news from information services can be automatically integrated into the applications and displayed graphically. SkyCard is also preconfigured to accept electronic mail from two popular mail products, Lotus Development Corp.'s cc:Mail and Microsoft Mail.

Although SkyTel paging operates in several countries, SkyCard will initially only be sold in the U.S. It is available now and costs $249.

©SkyTel: (800) 759-9779.

LOCAL NETWORKS

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Microsoft makes move into BackOffice with Windows NT

Vendor packages collection of server-based products.

BY PEGGY WATT

Microsoft Corp. last week took direct aim at the corporate network market, packaging a handful of its server-based products in much the same way it bundles its desktop applications.

Microsoft BackOffice, founded on Version 3.5 of the company's maturing Windows NT operating system, is a collection of products that Bill Gates, the company's chief executive officer, called strategic and a priority business growth area.

In addition, the package includes Microsoft's SNA Server 2.1 gateway, SQL Server 4.21a database, Microsoft Mail 3.2 electronic messaging software and the long-awaited Systems Management Server (SMS) 1.0, a systems management offering previously known as Hermes.

Microsoft's Barth spreads the word on Systems Management Server, formerly know by code name Hermes.

Microsoft Mail will be replaced in BackOffice by Exchange Server following its release, scheduled for next year, said Michael Nash, group product manager for Microsoft's Windows NT Server.

The updated version of Windows NT (formerly known as Daytona) not only is flanked by a collection of server-based offerings, but by Microsoft's client-side applications. The Redmond, Wash., firm plans to ship next month 32-bit versions of all of the applications that make up the desktop-based Microsoft Office, including Word, Access, Excel, Powerpoint and Microsoft Mail.

BACKOFFICE MANAGEMENT

The most intriguing component of BackOffice may be SMS. It provides management functions such as in-ventory, software distribution, performance monitoring and troubleshooting, said Rich Barth, product manager for Microsoft's SMS unit.

SMS collects data about hardware and software systems throughout the enterprise, and can automatically and remotely install software updates from a central site, Barth said. It monitors systems performance and flags aberrations for the systems manager, he added.

British Telecom International, Inc., an SMS beta-test site, "reduced by half the number of times it had to go to a remote site to fix a problem" on a 3,000-node enterprise net, Barth said. "Also, before Systems Management Server, about 5% of its service calls required on-site follow-up."

SMS requires a link to a SQL Server database, from which it draws some of the data it needs to identify and fix problems, he explained. The software is due to ship in November.

Microsoft is also updating its SNA Server to Version 2.1, which provides easier access to IBM host data from Windows NT 3.5. This server has its roots in the OS/2 Communications Manager developed by Microsoft and IBM but was rewritten for Windows NT. It integrates TCP/IP and Systems Network Architecture data on a network to give LAN users full-SNA functionality.

BackOffice components...

- Windows NT Server 3.5
- SQL Server 4.21a
- SNA Server 2.1
- Systems Management Server 1.0
- Microsoft Mail (will eventually be replaced by Exchange Server)

...and pricing

- $2,199 per server
- $309 per client

SNA Server also supports AppleTalk, Named Pipes and Novell, Inc.'s IPX/SPX. SNA Server 2.1 is scheduled to ship next month, as is SQL Server 4.21a, which is being updated for Windows NT.

All of the server products run on Windows NT 3.5, which is now repackaged into two clear components: the desktop Windows NT Workstation 3.5 and Windows NT Server 3.5. Both are leaner than previous Windows NT implementations in that they require a third to a fourth less memory.

New communications features in Windows NT Server include a gateway service for Novell NetWare, according to Nash. "NT Server can act as a gateway between Net-

See BackOffice, *page 24*

IBM ready to give OS/2 a face-lift

BY PEGGY WATT

Austin, Texas

IBM is preparing to release by mid-October a three-part update to OS/2 consisting of full 32-bit support, new communications utilities and access tools, and a graphical user interface face-lift.

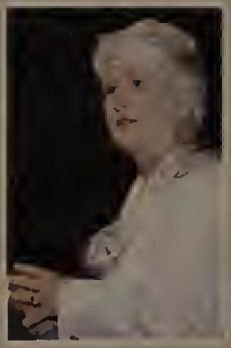
OS/2 3.0 will also be available in three editions:

- An entry-level operating system, code-named Warp, is widely distributed to users in beta test.
- A client edition, which includes Warp plus such LAN features as requesters, a remote-client LAN facility and systems performance monitor.
- A server edition, which is still in development and expected to ship later than the other two models.

All three editions provide new communications features, including Internet access, TCP/IP support, a real-time conferencing utility, shells to on-line services and support for PCMCIA devices.

The entry-level version runs in 4M bytes of random-access memory and provides the core technology for the other editions. It runs Windows 3.X applications unchanged, unlike the new versions of Windows itself, dubbed Windows95. IBM is positioning OS/2 3.0 as an upgrade path to Windows 3.X users, as well as to OS/2 2.1 and 2.11 users.

> The Internet is clearly the Oregon Trail for the Information Highway. And Warp will help users traverse that trail easily and painlessly."



Ellen Hancock
General manager, Networking Systems and Software Solutions divisions, IBM

The LAN client edition will require 8M bytes of RAM; information on RAM requirements for the LAN version was not available.

OS/2 3.0 has been well received by beta users. After some closely monitored outside testing, IBM released both OS/2 and its recent LAN Manager updates to interested current customers through its bulletin board system.

"It runs well with our NetWare requester," said Mark Krueger, LAN administrator for John Deere Insurance Group, Inc. in Moline, Ill., and an OS/2 3.0 beta tester. He runs OS/2 2.1 on 200 workstations on a Novell, Inc. NetWare LAN. The beta version installed easily and has supported Windows applications without a hitch, he added.

OS/2 3.0 is more compact and efficient, and will enable Mobil Natural Gas, Inc. to dust off some older Personal System/2 Model 70 systems and run OS/2 on them, said Karl Collins, technology group team leader for the Houston-based firm.

"The beta is faster than the current version," which Mobil Natural Gas runs on 26 servers, Collins said. "We're definitely seeing better performance. The user interface and management utilities are easier to use, too."

See OS/2, *page 24*

BRIEFS

Avalan Technology, Inc. of Holliston, Mass., has introduced a new Windows **remote control software** package called Remotely Possible/Sockets. The remote control, file transfer and chat software package includes support for a variety of vendors' TCP/IP implementations via a Windows Sockets interface.

The software is priced at $298 and is available now.

Avalan: (800) 441-2281.

Beame & Whiteside Software (B&W) plans to ship in October a new **Network File System server** for Microsoft Windows NT. BW-Connect NFS Server for Windows NT is a multitasking software designed to let a Windows NT server provide full NFS services to any NFS client. It supports many Unix features, including naming conventions and aliases, and supports multiple file system types.

BW-Connect is a native 32-bit, multithreaded Windows NT application and runs on any Windows NT hardware platform.

The software, which supports both Windows NT 3.1 and 3.5 (Daytona), is priced at $249.

B&W: (919) 831-8989.

SysKonnect, Inc. is launching a new line of Asynchronous Transfer Mode **network interface cards** to go with its family of Fiber Distributed Data Interface, Ethernet and token-ring products.

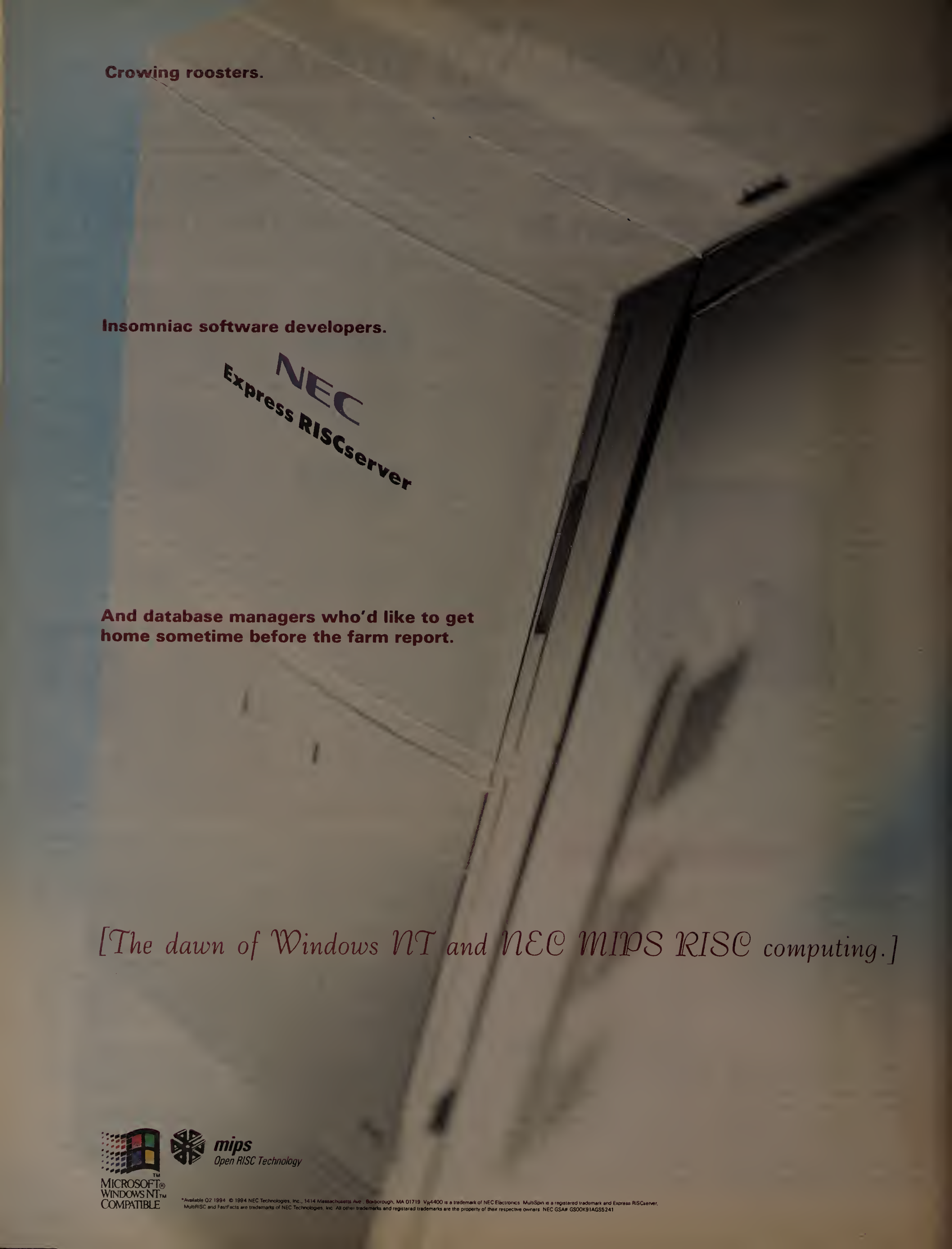
The new line includes interface cards for SBus platforms and Extended Industry Standard Architecture (EISA), all with either multimode fiber or unshielded twisted pair support.

The SK-NET ATM SBus for SPARC-based systems costs $1,895 for fiber and $1,395 for copper; the SK-NET EISA for Intel Corp. (Pentium), Hewlett-Packard Co. and Silicon Graphics, Inc. systems costs $1,995 for fiber and $1,695 for copper.

SysKonnect: (408) 437-3800.

UB Networks, Inc. last week announced that it has expanded its relationship with **Network TeleSystems** (NTS) to include worldwide sales and support by UB of NTS' new line of network protocol software, including its TCP Pro product.

3Com Corp. last week reported revenue of $249.3 million for its first fiscal quarter ended Aug. 31, a 54% increase over the $161.1 million reported in last year's first quarter. Earnings soared to $28.5 million for the quarter, more than double the $13.4 million it recorded in the first quarter last year. Internetworking product sales grew 71%, according to the company.



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And database managers who'd like to get home sometime before the farm report.

[The dawn of Windows NT and NEC MIPS RISC computing.]

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o that database managers could get home from work at a reasonable hour, the developers of Windows NT™ watched many sunrises from behind their MIPS® RISC computers.

(They chose machines built around the MIPS RISC architecture for two basic reasons: sheer performance and superior technology. Fact is, the NEC V$_R$4400™ MIPS processor is at the heart of some of the most powerful computers in the world.)

Was it all worthwhile? Absolutely. First, Windows NT lets companies move their information management into the future without missing a beat. Or shutting down their mainframes.

Second, the brilliant new database management application made possible by Windows NT – Microsoft SQL Server – makes managing databases simpler. And gets enterprise information to end users easily and fast.

Third, the direct descendant of the machines used to *develop* Windows NT – the powerful, dependable NEC Express RISCserver™ – is now available to *run* a new generation of programs. Which means they will run quickly, seamlessly, smoothly. Allowing database managers everywhere to sleep a lot better.

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And the rest is history.

NEC

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Windows Connectivity Forum

Windows for Workgroups gains a following

By Joel Diamond
Technical director
WUGNET
Windows User Group Network
76702.1023@CompuServe.com

My informal survey of Windows users on CompuServe indicates that many large corporate sites have upgraded their Windows 3.1 workstations to Windows for Workgroups 3.11. Surprisingly, the decision has not been based on Windows for Workgroups 3.11's well-documented peer-to-peer networking support.

Rather, almost everyone has cited that Windows for Workgroups 3.11 is a superior networking client than Windows 3.1 and a "better Windows than Windows" for applications. Windows applications run faster on Windows for Workgroups 3.11 than on Windows 3.1 because the former features a 32-bit I/O kernel. Windows for Workgroups 3.11 also boasts an improved Windows File Manager that provides security and a customizable tool bar, among other things.

Other features cited by users who have made the switch include Windows for Workgroups 3.11's Print Manager, Control Panel and the multiobject storage support on its clipboard.

If you haven't upgraded your users to Windows for Workgroups 3.11 yet, drop by the forum and participate in the thread WFW311 a Better Client on the HOT TOPICS section.

PICKS OF THE WEEK

Each week, the forum's technical staff will be selecting Forum Picks of the Week, so check them out on WINCON's libraries. The picks will include shareware, public domain tools and applications designed to enhance your Windows connectivity.

This week's pick is ComT by David Yon, author of the E-mail off-line reader RfdMail. ComT will be available for download in File library 1 under Forum Resources as COMT.ZIP.

ComT is a utility designed to let Internet users employ their favorite Windows communications package as their Telnet client. It will let users dial up CompuServe via the Internet and access CompuServe and Internet resources simultaneously.

ComT relies on an unused communications port on your workstation and redirects your application's communications port activity to emulate a Hayes-compatible modem. Among other things, it replaces the telephone number to be dial with an IP address.

We have tested ComT with Ozark Software's OzCIS, DataStorm Technologies, Inc.'s Procomm Plus for Windows 1.0 and 2.0, FutureSoft Engineering, Inc.'s Dynacomm and CompuServe, Inc.'s WinCim 1.2 and WinCim 1.3.

BY THE BOOKS

WINCON features the authors of the best-selling technical reference, *WUGNET Windows Connectivity Secrets* from IDG Books WorldWide. This 1,000-page reference is a guide to Windows communications, fax, net installation, setup and optimization. It includes coverage on multimedia, document management, online services and client/server computing.

Authors of that book, Runnoe Connally, Shel Hall and David Rorabaugh, will be on hand to discuss these topics and will be supported by a team of experts on a variety of topics. A detailed table of contents is available in Data library 1 under Forum Resources as WUGTOC.ZIP.

CompuServe

To get to WINCON, type "Go Wincon" at any ! prompt on CompuServe. If you are not currently a member of CompuServe, *Network World* and WUGNET are offering a free membership sign-up by calling (800) 524-3388. Ask for operator 230. As a special resource to *NW* readers, we have set up an area promoting peer-to-peer discussions of critical networking issues.

OS/2

Continued from page 21

Robert Otto, LAN administrator with Amoco Corp. in Chicago who evaluated beta versions of both OS/2 3.0 and Microsoft Corp.'s Chicago operating system, said, "Chicago's almost up to OS/2 now."

Otto is testing OS/2 3.0 for performance on a 35-node token-ring LAN. "It seems to run faster" than the previous version, he said.

"The problems with OS/2 have been speed and that it's not seamless enough with Windows applications," Otto said. If OS/2 3.0 delivers on promises to fix those deficiencies, he'll install it for production, he added.

One of OS/2 3.0's more interesting new features is its built-in Internet front-end interface for customers with Serial Line Interface Protocol (SLIP) links into the 'Net. Internet support includes access utilities such as Gopher, File Transfer Protocol and telnet.

"The Internet is clearly the Oregon Trail for the Information Highway," said Ellen Hancock, general manager of IBM Networking Systems and Software Solutions divisions. "And Warp will help users traverse that trail easily and painlessly. As people travel through cyberspace, they don't want to hassle with all the technology that makes it possible."

©IBM: (800) 251-2177.

BackOffice

Continued from page 21

Ware and another LAN [operating system]," he said.

Windows NT 3.5 can support 256 dial-in sessions (up from 64) and includes Point-to-Point Protocol and Serial Line Interface Protocol (SLIP) support. A new Dynamic Host Configuration Program assigns Internet provider addresses dynamically.

The software requires 12M bytes of RAM, and runs on Digital Equipment Corp.'s Alpha, Intel Corp.'s 486 and Pentium. MIPS Computer Systems, Inc. PowerPC support is under development.

To entice NetWare users, Microsoft is offering an upgrade discount similar to those it provides for desktop applications. It is also offering a migration tool.

The Windows NT Workstation 3.5, intended as the client operating system, now supports the OpenGL graphics libraries standard from Silicon Graphics, Inc.; 32-bit Object Linking and Embedding 2.0; and true multithreading to run multiple DOS sessions for 16-bit applications. It also includes a NetWare redirector and a leaner TCP/IP stack with PPP and SLIP support.

The complete BackOffice package costs $2,199 for the server licenses (a $1,526 savings over separate purchases) and $309 per client.

©Microsoft: (206) 882-8080.

NET RESULTS

by Mark Gibbs

Perfection and the perfect squeegee

I have been on what should be a simple quest. But alas, reality has shown that what I want may be a dream.

Am I after diamonds, the Holy Grail, how to make a successful souffle, or the secret of life, the universe, and everything? No.

(Anyway, I already know the secret to life, the universe, and everything. It is 42. If this means nothing to you, drop me a line and all will be revealed. But, once again, I digress.)

All I want is a squeegee for our shower.

Not just any squeegee you understand. I want the perfect one.

The perfect squeegee is one that works on tile and glass, actually removes the water, doesn't streak at the edge of the swept area and doesn't cultivate mildew within 10 minutes of use.

The hunt for the perfect squeegee is actually only one of many quests for perfection in which I am engaged.

That vertically challenged ruler Napoleon Bonaparte is quoted as having said, "The desire for perfection is the worst disease that ever afflicted the human mind."

But I disagree.

It is the quest for perfection, particularly where squeegees and software are concerned, that drives invention and creates excellence.

And I know from discussions with network managers and users that my quests for perfection (with the exception of my squeegees) are in common with thousands of others' quests.

For example, look at the quest for the perfect Personal Information Manager (PIM). Take my current PIM...please.

My current PIM was best of breed two years ago. But within six months of using it, I discovered the holes (a polite term for yawning chasms) in it.

And while there are products that fix some of these problems, I have yet to find a product that improves on it so much that I want to make the swap.

PackRat from Polaris Software looked like the hands-down winner when it came out a few months ago. Unfortunately, it was a software entomologist's dream; it had the least stability I've seen in a product for some time.

What made PackRat look so good was its modularity. It allowed you to build your own PIM using what Polaris called "objects" with reckless abandon.

Now this modularity, without the fragility, is what we really require for applications as a whole.

We need applications to be modular so we can populate our networks with functions from multiple vendors to let us build a consistent framework for doing business.

And if they could avoid blowing up every ten minutes, we'd appreciate it a lot.

Microsoft's Object Linking and Embedding 2.0 is going in the right direction, but the technology is hardly stable or a standard in terms of implementations outside of Microsoft products.

Voltaire said, "Perfection is attained by slow degrees; it requires the hand of time."

Well, we've had the hand, arm, leg and foot of time, and the software industry should be a hell of a lot closer to perfection than it currently is.

How about perfection in documentation? Now there is a whole column by itself. The vast majority of documentation is dreadful. Not just bad but downright atrocious.

Go searching for documentation that is better than barely adequate, and you'll be on the quest from hell.

I think that the current problem for most vendors is confusing complexity with value.

There are far too many products that slice, dice and crinkle cut, and, if the vendors are to be believed, cure baldness and the common cold.

Simplicity. That should be the goal. Do something as near to perfect as possible, rather than as many things as possible with all the robustness of a tissue paper raincoat.

So what do I want? I want building block software that is modular, fulfills its intended function perfectly and is truly robust.

Oh, and I'd like a really good squeegee for my shower.

➜ Gibbs is a consultant and writer based in Ventura, Calif. He can be reached at (800) 622-1108, Ext. 504, or on the Internet at mgibbs@rain.org.

Getting results

If you'd like to discuss the content of this or any other "Net Results" column with Mark Gibbs, check into the new Net Results section of the WINCON forum on CompuServe ("GO WINCON"). You will find all of the past columns there. So if you want to send a letter to the editors or just "flame on," WINCON's Net Results section is the place to do it.

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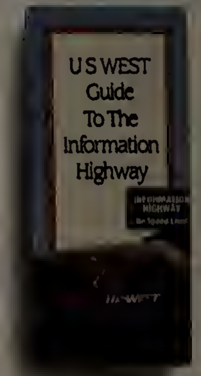
Again, things are great. Will write again soon. Wish you were here.



The fold-out U S WEST Guide to the Information Highway. Suitable for framing. Or glove compartments.

U S WEST® COMMUNICATIONS

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CBS Radio goes live with desktop digital audio, ISDN

BY ELLEN MESSMER

Washington, D.C.

At the CBS Radio Division, a new lineup of Windows-based PCs equipped to manage and store digital audio recordings is replacing the traditional analog sound studio for reporters putting together the news.

Using the 486-based Personal Audio Computer Editing (PACE) desktop systems, reporters in the bureau here can take in audio news feeds from Capitol Hill and the White House, cut and splice interviews, and record news intros. When the news report is ready, a simple touch of the button sends it over a LAN and out to CBS radio broadcast stations nationwide over ISDN lines or the company's very small aperture terminal network.

"Our radio news people are using this to gather and edit material for the national newscast at the top of the hour," said Jerome Navies, director of the CBS Radio Station News Service here. "Each PACE unit is the equivalent of a sound studio with a four-channel mixer with one audio output and a four-cart machine."

CBS Radio's Washington, D.C. newsroom puts digital audio to work.

CBS Radio has redesigned its bureau here around the PACE desktop studio, and the New York bureau is having the systems installed, as well. In the future, the radio version of CBS' David Letterman show will be compiled and distributed using PACE.

"We expect that every station CBS owns will get PACE," said Tony Masiello, CBS Radio's vice president of technical operations. "We did this for increased productivity. We wanted news reporters to be able to produce the same sound quality news reports without the audio technician.

Developed by CBS Radio in conjunction with Holmdel, N.J.-based Corporate Computer Systems, Inc., PACE has a graphical interface using icons such as the White House, the Capitol, tape recorders and master tapes.

Each PACE workstation lets reporters mix and record four separate audio segments at the same time. By touching the icon for a tape recorder, for instance, the PACE workstation actually becomes a tape recorder. Reporters wearing headset microphones connected to the PACE unit can record their news intros.

The PACE audio compression coder/decoder, which converts sound from analog to digital at a 6-to-1 compression rate, is based on the MPEG standard called Musicam. Audio files are stored on the reporter's PACE hard drive.

Reporters work with audio material gathered by CBS Radio reporters on Capitol Hill and at the White House who send digital audio recording over private lines to the Washington bureau's file audio file server. Reporters on-site elsewhere can transmit reports via portable satellite uplinks.

Net transfer of 15KHz of high-quality audio consumes about 128K bit/sec of bandwidth. The audio material is stored on a central data repository, a file server based on Microsoft Corp.'s Windows NT operating system that maintains audio news feeds from the radio wire services.

Reporters writing sports, business and political news access the audio files at their desktop over a TCP/IP Ethernet LAN.

"We treat the audio as data, and these are large files," Masiello said. He added that CBS Radio had initially set up a Unix file server but found that Unix does not partition audio files of larger than 1G byte very well.

The chief drawback to PACE is that it does not yet include simple text processing to let reporters write their news scripts, forcing them to jump to a DOS-based PC to type out copy for radio reports.

However, CBS Radio plans to have its newsroom editing system from Basys Corp. converted to Windows to run on the PACE desktop units within six months.

The Ethernet LAN at the CBS Radio bureau here has begun to show signs of strain over the last few months as use of PACE grows, Masiello noted. CBS is now considering other options to support increased network use.

"We've looked at Asynchronous Transfer Mode, but we feel it's not ready for prime time on the desktop," Masiello said. But a cutover to switched Ethernet for CBS Radio now appears the most likely choice for the future.

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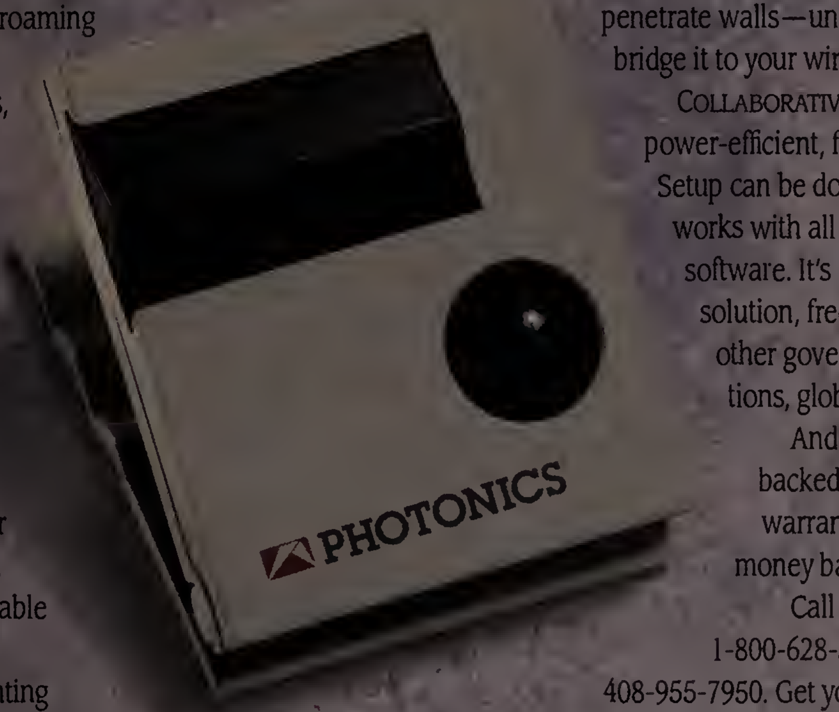

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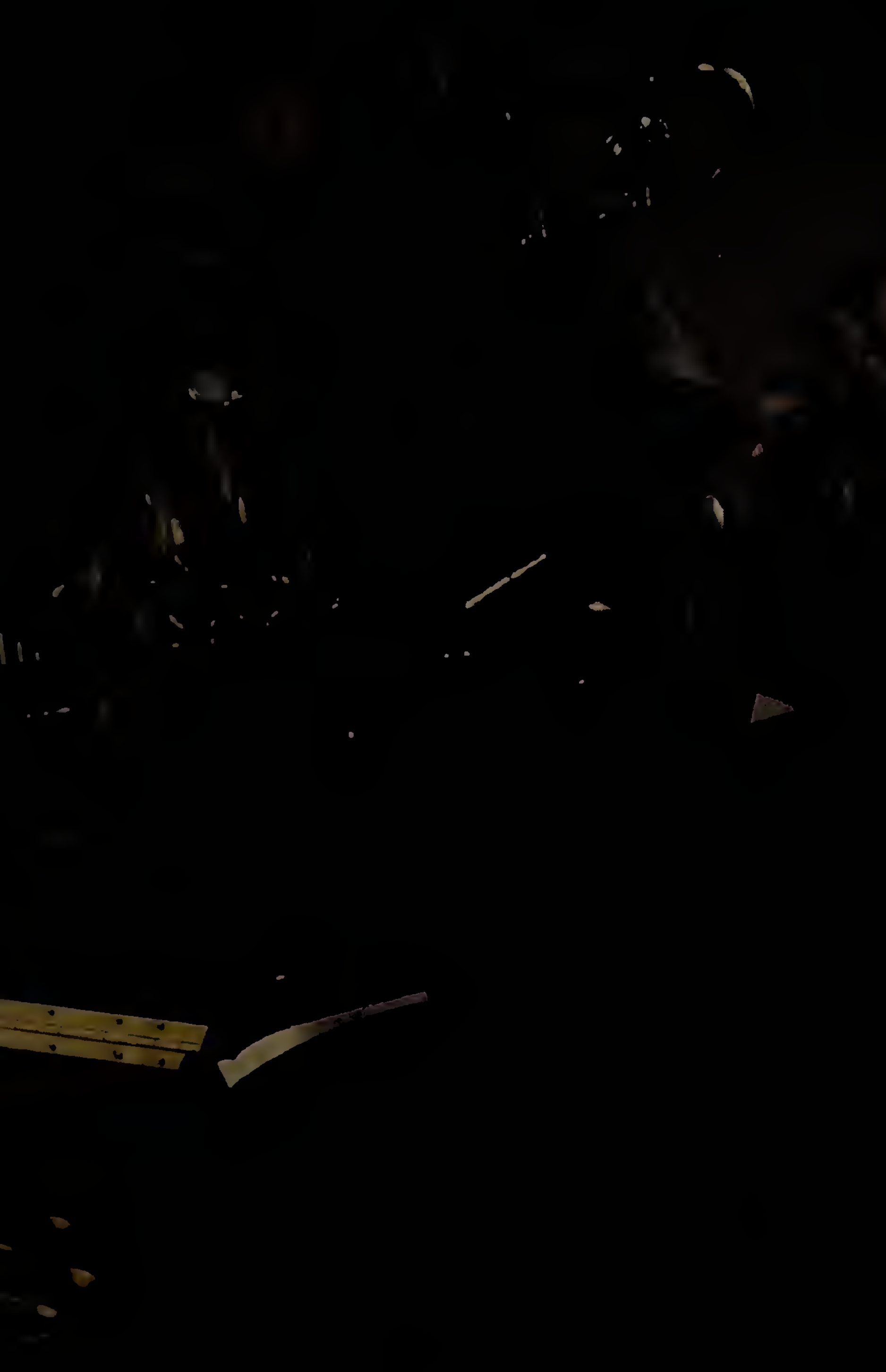

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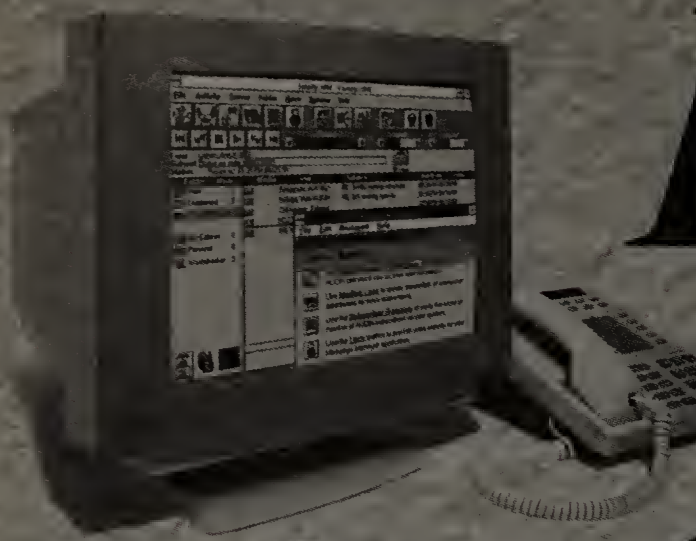

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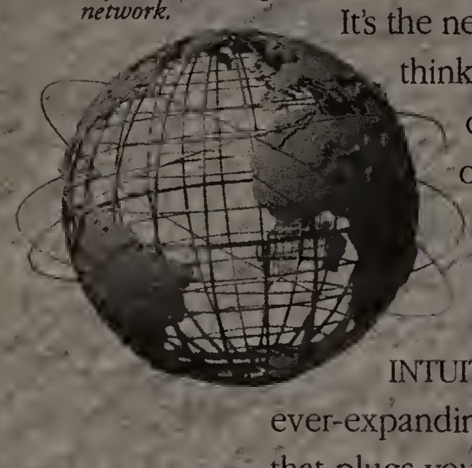

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GLOBAL SERVICES

Voice, Data and Wireless Services, Regulatory Issues and Voice CPE

Cellular setup minimizes roaming fees

BY JOANIE WEXLER

Lincoln Park, N.J.

Cost-conscious companies outfitting mobile workers with cellular phones should closely compare the boundaries of carriers' base serving areas with their users' travel patterns when choosing a service.

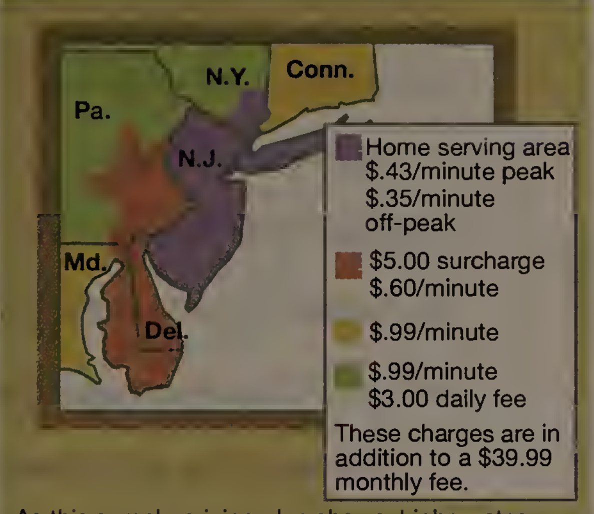
So says Fred Ploetz, regional administration manager for Klockner-Moeller Corp., a manufacturer of electrical equipment that has slashed cellular roaming charges in recent months by better matching its home service area to user routes.

The company's mid-Atlantic regional branch shifted service providers for salespeople traveling among Southern New Jersey, Long Island and Westchester County, N.Y., from Cellular One of New Jersey to Bell Atlantic Mobile Systems, Inc. (BAM). The reason, he said, was that a BAM local serving area extended throughout all these areas, relieving the company from paying unpredictable and costly roaming charges.

Cellular One required Klockner-Moeller to cross

See **Roaming**, *page 36*

You stray, you pay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As this sample pricing plan shows, higher rates and fees can take a toll on cellular users that roam out of BAM's New Jersey/New York home territory.

GRAPHIC BY SUSAN J. CHAMPENY

Teleconferencing users get LAN link

Latitude Communications eases meeting setup and access.

BY DAVID ROHDE

Santa Clara, Calif.

A start-up firm will announce today an audioconferencing system that can be controlled from a touch-tone phone or Windows-based personal computer, giving both network administrators and employees new flexibility in how they set up and gain access to business meetings.

The MeetingPlace unit from Latitude Communications, Inc., combined with associated software for client PCs, gives users a choice of entering a prearranged meeting by using touch-tone commands or by clicking on an entry in a Windows menu.

When the user selects the Windows option, the PC sends the request to join the meeting to the MeetingPlace unit via an Ethernet link. The unit then dials the telephone at the user's desk by going through its private branch exchange interface.

Thus, the system avoids relying on expensive computer-telephone integration links that eat up processing power.

Users can also get information about any scheduled meeting via the Windows interface, including the list of people attending, the agenda and the length of the meeting. Both people within the building and outside the building can attend by dialing in to the MeetingPlace unit.

Although the system does not

See **LAN link**, *page 36*

BRIEFS

In a move observers said could lower international telecommunications rates through increased competition, resellers **ACC Global Corp.** and **Alanna, Inc.** last week received International Simple Resale certificates from the **Federal Communications Commission.** The FCC nod allows the resellers to market switched services between the U.S. and U.K. alongside traditional carriers such as **AT&T, MCI Communications Corp.** and **Sprint Corp.**

RAM Mobile Data last week announced several new customers of its packet radio network: the **Overland Park Fire Department** in Overland Park, Kan.,; **Merchants Home Delivery Service, Inc.** in Oxnard, Calif.; and **Unisys Corp.** in Blue Bell, Pa. The multiyear Unisys contract will also include systems integration of notebook personal computers, wireless modems and gateway software by RAM.

Also, a customer service division of **Eastman Kodak Co.** has selected RAM for pilot testing applications that link repair personnel in the field to home office databases and messaging systems.

InStream Corp. in Woburn, Mass., is working with more than 25 makers of messaging, mail and forms software to create an **electronic commerce network** for behavioral health care companies. InStream resells **AT&T** core net services. Two large health care providers have already signed up for InStream services: **U.S. Behavioral Health** in Emeryville, Calif., and **CNR Health, Inc.** in Milwaukee.

InStream: (617) 935-2100.

GTE Telephone Operations has become a distributor of **PictureTel Corp.**'s videoconferencing systems and multipoint bridges in the U.S. The move lets firms bundle equipment purchases with services from a variety of long-haul service providers.

GTE: (800) 483-4926.

Calif. intra-LATA toll rates cut nearly in half

BY BILL BURCH

Sacramento, Calif.

California companies will be paying a lot less for intra-LATA toll calls when the state launches competition for the service on Jan. 1.

Currently, Pacific Bell, GTE Corp. and other local carriers handle all local toll traffic, but the state's public utilities commission (PUC) plans to let long-distance carriers into the market as of the first of the year. Long-distance carriers now handle about $500 million worth of short-haul traffic per year in the state through special access arrangements.

In preparation for the coming competition, the PUC this month announced that tariffs for calls within a local access and transport area will fall an average of 44% for daytime calls. The new rates will be among the lowest in the nation, and many business customers should see lower overall bills, despite a planned rise in basic monthly rates, the commission calculated.

For a 3-minute daytime call in the state of 31 to 40 miles — such as from Anaheim to Los Angeles or San Francisco to Sunnyvale — customers currently pay 75 cents. As of the first of the year, the price of those calls will fall to 36 cents. Similarly, a 4-minute daytime call from San Francisco to San Jose that now costs $1.09 will be cut to 52 cents.

BRINGING UP THE REAR

California is one of the last states to introduce local toll competition, and its local toll rates are ripe for competition, according to tariff analyst Eric Paulak, an associate publisher with the Center for Communications Management Information in Rockville, Md.

Under the daytime business-rate tariff for 1+ dialing with Pacific Bell, a 12-mile call costs 17 cents for the first minute and seven cents per minute thereafter. In New Jersey, a state that already has local toll competition, Bell Atlantic Corp. charges only nine cents during the first minute and three cents during each additional minute for a comparable call.

Calls at the other end of the mileage chart show the same disparity, Paulak said. The rate for a 70-mile call with Pacific Bell runs 40 cents for the first minute and 31 cents for each additional minute; Bell Atlantic in New Jersey charges 42 and 12 cents, respectively.

The local toll competition is doing more than just driving down rates. Companies will also get a chance to renegotiate contract tariffs, which Pacific Bell has with 40 of its largest customers.

"What that means is, yes, there are standard tariff rates," Paulak said. "[But] individual companies can negotiate for better deals. At the same time, they can do that with any standard long-distance carrier."

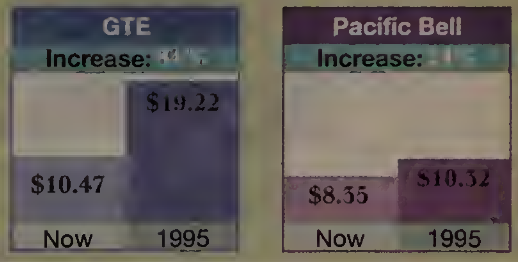
The rate cuts are meant to help Pacific Bell, GTE and other local carriers compete with 93 long-distance companies that plan to enter California's local toll market. The decrease in local toll revenues, which help subsidize basic monthly rates, will mean a rise in those basic rates.

BUT SERVICE FEES RISE

For businesses, Pacific Bell will be raising its measured line rate almost $2, while GTE customers will jack up rates $8.75 (see graphic). Basic service will continue to be priced below cost.

On the other hand. . .

As of Jan. 1, California is hiking its monthly service fees, although usage-charge cuts should more than offset them.



The playing field for local toll competition will not be completely level. Californians will still have to dial five-digit access codes to reach a long-distance carrier for a local toll call.

In the near future, the PUC plans to take up presubscription for local toll calls, which would enable customers to specify a carrier for local toll calls, just as they do for long-distance calls.

The fight for the lucrative California market promises to be a battle royal as Pacific Bell and GTE take on telecommunications behemoth AT&T and other long-distance carriers. In addition to the local toll market, local private lines, private branch exchange trunks and Centrex services will all be subject to competition.

In addition, the state will allow competition for long-distance directory assistance, and carriers will be allowed to complete calls for rival companies' calling-card customers. The PUC's order also slices access charges almost in half, a cut that Paulak said should be passed on via lower long-distance rates.

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RATE & TARIFF MONITOR

by Eric Paulak

AT&T finds new way to up rates, migrate customers

If you had to place an ad every time you raised your prices, it would create bad publicity and you would probably lose business.

But that's exactly what AT&T has to do every time it changes its rates. To combat the problem, the carrier has come up with a new way of turning some of that negative publicity into, at least, neutral publicity.

Instead of overtly announcing rate increases, AT&T has started cutting its discounts. Cutting discounts may not seem like as big a deal as raising rates, but it has the same effect as a rate increase — you pay more and you look for a new service.

In its latest example, effective Oct. 1, AT&T is cutting the maximum volume discounts on its Pro WATS, All Pro WATS and Pro ACAP services from 20% to 15%.

So a Pro WATS user with a monthly commitment of $2,000 — the minimum for this discount — will get a savings of only $300 per month instead of the usual $400 per month. That's a difference of $100 per month or $1,200 per year — the equivalent of a 6.25% rate increase.

On top of all that, AT&T is doing away with its 31.2% discount on the same services for certain holidays. Plus, as part of the changes, you can no longer access Pro WATS service using dedicated access lines.

Why all the changes with Pro WATS? At $2,000 per month, you shouldn't be using Pro WATS; you should now be using AT&T's UniPlan, and that's what the carrier is pushing you to do.

For a 300-mile switched access call, Pro WATS costs $.271 per minute. With UniPlan, the same call costs $.254 per minute. UniPlan also gives you the option of dedicated access rates, by which you would pay $.182 per minute for the same 300-mile call.

Also, with UniPlan's 13% discount for a commitment of $2,000 to $10,000, that $.254-per-minute switched access rate turns into $.221 per minute.

With its new lower discount of 15%, the best you can do with Pro WATS is 23 cents per minute. With the previous 20% discount, however, at 21.7 cents per minute, Pro WATS would have beaten UniPlan's best rate.

If you have dedicated access with Pro WATS, you have no choice but to switch to UniPlan — or another service — or get rid of your dedicated lines. If you're splitting a T-1 line to access services other than Pro WATS, however, chances are that you're not going to dump the line.

That makes UniPlan a better deal all-around, and there are no downsides.

So why is AT&T trying to migrate you from higher cost Pro WATS to lower cost UniPlan if it's a better deal for you? While it doesn't appear to be in AT&T's best interest, in reality, it is.

Pro WATS is a one-sided service: outbound. So if you're just using Pro WATS, you may not be using one of AT&T's inbound services. With a bundled service like UniPlan — or lower volume bundled services such as CustomNet and Small Business Advantage — you're more likely to tie up all your services with AT&T.

And while UniPlan doesn't require larger commitments than Pro WATS, it does have more options, such as 800 service — which can come with advanced 800 routing features — all of which cost more money. And that's money you wouldn't have spent if you were still with Pro WATS.

Thus, while making Pro WATS less appealing by slapping on a backdoor rate increase, AT&T is making its feature-rich and, potentially, more profitable services look better and better.

The best part of all is that UniPlan does offer better rates that are yours for the asking. It's up to you whether you want to spend more money for the bells and whistles that come with a bundled service.

➙ Paulak is associate publisher for the Center for Communications Management Information, a provider of rate and tariff information in Rockville, Md. He can be reached at (301) 816-8950, Ext. 327.

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OUTSOURCING

Companies turn to Internet server management firms

BY BILL BURCH

Washington, D.C.

With more companies setting up shop on the Internet, contractors have begun to offer server management that can shoulder some of the burden of setting up and managing an Internet site.

By outsourcing an Internet server, companies can save money on hardware and staff, avoid Internet users crowding corporate nets and keep hackers from proprietary data, analysts said.

The latest entrant into the server market is CompuServe, Inc., which today intends to announce the purchase of a stake in Network Publishing, Inc., a year-old Internet service provider. Based in Utah, the start-up is led by President Richard Maw, a former Novell, Inc. employee who helped design Novell's home page on the World-Wide Web (WWW).

As a service provider, Network Publishing sets up WWW server sites for customers, assembling voice, video and data into multimedia documents with hypertext fields that provide connectivity to related information in other databases.

The World-Wide Web is an Internet-based system of databases connected by hypertext links. It lets users click on a word and be connected to a different server for access to related documents.

The investment in Network Publishing is the latest in a series of Internet announcements from CompuServe. Last month, the carrier began offering businesses Internet access via frame relay and X.25.

CompuServe has already set up its own WWW site and intends to offer Internet services to current CompuServe on-line service clients such as Microsoft Corp., Novell and Hewlett-Packard Co., said Jim Hogan, director of CompuServe's product marketing.

Other on-line service providers also are planning to get into managing Internet servers. In Elmsford, N.Y., Internet access provider Advanced Network & Services, Inc. (ANS) provides installation and configuration for servers on customer premises.

ANS sells a turnkey server package called ANS InterServe, which allows a company to set itself up as an Internet node. Supported services include network news, anonymous FTP, wide-area information servers (WAIS), Internet mail relay, mailing list management and domain name service. Gopher and WWW support is planned for the fourth quarter, said Rosalia Baccarella, manager of marketing and communications. The company also sells its ANS InterLock fire wall product separately.

Outsourcing an Internet server sounds good to Dick Bradner, manager of net and office services for Progressive Insurance Co. in Cleveland. Bradner would like to set up a Gopher site, but worries about security and whether big file transfers will degrade network performance. An outside provider would solve both problems, Bradner said.

Along with Progressive, a host of companies are considering Internet servers for everything from documentation and software distribution to on-line catalogs, according to consultant Joel Maloff, president of The Maloff Co. in Ann Arbor, Mich.

Firms can save money and maintain network reliability by outsourcing Internet servers, but they will typically have to pay a contractor $20,000 to $30,000 to set up a customized server site, Maloff said. On the downside, by going with outsourcing, companies may wind up with decreased control over a WWW site, performance reports that are not in the desired format, and contractors that do not display proficiency and professionalism, he said.

With WWW servers for hypertext less than one year old, the server management business is still embryonic, Maloff said. And most users simply do not have the network connections needed to take advantage of multimedia.

Attention agents in the field: Seiko puts pager in wristwatch

BY BILL BURCH

Washington, D.C.

The country's junior G-men may never get to shoot it out with Pruneface, but the chance to strap on something approaching Dick Tracy's communicator is here with Seiko Corp.'s recently announced MessageWatch, which can receive information services via radio signals.

Seiko is deploying an FM subcarrier network — which carves data channels out of existing FM radio signals — that it will use to deliver as many as 16 characters of information to MessageWatch users. New generations of watches will offer more sophisticated display options, executives said.

Even with the watch's current limited display capabilities, a substantial amount of information can be conveyed, provided the receiver understands the context of the message, executives claim. Possible information services include voice and electronic mail notification, weather reports, stock quotes, lottery numbers and sports scores.

The watches start at $79.95, and the information services will start at $6.95 per month.

With their alphanumeric displays, the watch could offer paging, but Seiko does not want to go head-to-head with current providers of paging services, according to Michael Park, vice president of business and network development for Seiko Communications of America, Inc.

"Entry of messages is very difficult, and we don't feel it's required to roll out this network," Park said. Instead, the company wants to position the watch as an information delivery system to consumers. However, the company has not signed up any information providers for broadcasts so far.

Seiko, which has committed $57 million to the project, is currently working to assemble a series of base stations across the country that can provide coverage in major metropolitan areas.

Local radio stations will broadcast data to the watches at 19K bit/sec using Time Division Multiple Access. Each watch is individually addressable with a 32-bit address field provided in the system's proprietary protocol, letting individual watches be remotely turned on and off for particular services.

The service is currently available in Seattle and Portland, Ore. Los Angeles will be added in October, followed by New York in December and Miami in March or April. Altogether, Seiko plans to have the service available in the top 20 U.S. markets in the next two years. Worldwide, plans call for deployment throughout Europe and around the Pacific Rim in three years.

Beyond watches, Seiko has big plans for broadcasting additional information services. For example, the system could send traffic updates to a driver's car radio as part of an intelligent vehicle highway system.

✆Seiko: (800) 456-5600.

LAN link

Continued from page 31

provide video or document sharing capabilities, Latitude officials hope the system puts an end to "get me" audioconferencing, where an employee at the conference site has to round up in-house and remote participants.

Instead, they are pushing the idea of "meet me" audioconferencing, where invited parties call in at the appointed hour.

"You avoid sitting at your desk waiting for the call — or diving for your desk as the third ring goes off," said Glenn Eaton, Latitude's director of marketing.

Unlike PBX-based systems that simply bridge calls together, MeetingPlace uses the PC software to provide advanced meeting management features. Without interrupting the flow of the call, MeetingPlace users can identify who is currently talking or who is just entering the meeting. Private breakout sessions can be set up on the fly to discuss sensitive topics.

The MeetingPlace is a 19-inch-wide rack-mountable unit with eight to 120 ports. In its largest configuration, the unit can support anything from 60 conferences with two participants each to a single conference with 120 participants.

It connects to a PBX through analog or T-1 connections, and on the other side to a LAN through an Ethernet card supporting TCP/IP.

The unit has a single telephone number that every meeting participant dials in to. Each meeting is assigned a number and a description, such as "Jack's staff meeting," displayed on the graphical interface.

Alternatively, the unit can link directly to the public carrier net, and the user can advertise an 800 number for participants to call.

Primary markets for the conferencing server will include sales forces, customer service departments, user groups for corporate products and services, and development teams. "It can be a departmental solution," Eaton said.

The eight-port entry-level system is priced at $39,500. Each additional port costs $2,000 to $3,000. The system is available now.

✆Latitude: (408) 988-7200.

Reality ☑ Check

Product: MeetingPlace
Company: Latitude Communications, Inc.

The benefits:
- Attendees dial a single, consistent phone number using a telephone keypad or Windows-based PC.
- Ends "get me" conferencing; each attendee dials in when ready.
- Better voice quality than PBX-based systems; cheaper than service bureaus.

The drawbacks:
- Does not provide videoconferencing.
- Does not provide document sharing.

The analyst view:
"MeetingPlace provides a simple and elegant way of conducting remote meetings. Given the widespread use of audioconferencing, we can't believe someone hasn't thought of it before."

Nancy Jamison,
senior industry analyst,
Dataquest, Inc.

Roaming

Continued from page 31

many service area boundaries. This incurred a per-day assessment and inflated per-minute charges.

The way today's cellular market is set up, when users travel outside their home service territory, they are generally assessed a $2 or $3 administrative fee per day. They also pay usage fees many times higher than those in the calling plan they negotiated in their home areas, explained Mark Lowenstein, director of wireless research at The Yankee Group consultancy based in Boston.

Average cellular prices run between 40 and 45 cents per minute, according to The Yankee Group.

BAM offers service in parts of New York, including Long Island and Westchester County, via its long-time joint cellular license with NYNEX Mobile Communications. Roaming charges have been largely eliminated at Klockner-Moeller because most of the users are accommodated by BAM's New York/New Jersey serving area.

Now the firm's users are encouraged to call the home office cellularly because the elimination of roaming charges has brought cellular costs down to about the same as wired costs, according to Ploetz.

"When you consider that a salesperson's time is at least $100 an hour, using it to get off the road to find a wired phone no longer makes sense," he added.

IMMUNE FROM COST?

Few users are immune from roaming charges, though. BAM users that pay a $39.99 monthly access fee per phone and travel outside their New York/New Jersey serving area, for instance, can see price hikes from 35 cents a minute to 99 cents (see graphic, page 31).

Users generally have no control over how a cellular carrier's serving areas are chopped up, and they cannot design their own home area. But there is strong competition in the cellular arena, with at least two providers in each market. Until the carriers themselves address what are currently inconsistent roaming fees and plans, users should leverage competition in their areas to minimize sticker shock at the end of the month, according to Lowenstein and Ploetz.

CLIENT/SERVER APPLICATIONS

Distributed Databases, Messaging, Groupware, Imaging and Multimedia

BRIEFS

Hewlett-Packard Co. of Palo Alto, Calif., last week introduced CICS for its HP 9000 platform — the first non-IBM platform to support the **transaction processing** software. CICS/9000 features two-phase commit transactions with mainframes and supports a variety of databases, including DB2 for HP-UX and databases from Computer Associates International, Inc. (Ingres), Informix Software, Inc. and Oracle Corp. Pricing ranges between $9,800 and $89,000 per server.

Hewlett-Packard: (800) 637-7740.

Oracle Corp. will announce this week Release 10.4 of its Cooperative Applications, a suite of more than 25 manufacturing, project management and accounting applications that work with the Oracle7 **database.** Release 10.4 will support the parallel processing capabilities of Oracle7 Release 7.1. Pricing was not available.

Oracle: (415) 512-7000.

Adobe Systems, Inc. recently agreed to join Component Integration Laboratories, Inc. (CIL), which is building an object-oriented **compound-document architecture** called OpenDoc. Other members are IBM, Apple Computer, Inc., Novell, Inc. and Lotus Development Corp.

CIL: (415) 750-8352.

Continuus Software Corp. of Irvine, Calif., formerly CaseWare, Inc., last week announced a new version of its **change management and problem-tracking application** for software development. Continuus 4.0 lets developers in disparate locations synchronize data, adds tools for integrating software data from other applications and provides a process model that gives developers a ready life cycle for their software. Pricing starts at about $4,000 per simultaneous user.

Continuus: (714) 453-2200.

Lotus looks to buy Edge in Notes development

BY ADAM GAFFIN

Cambridge, Mass.

Lotus Development Corp. last week signaled plans to further simplify Notes development — and to take a bigger share of the development market — by acquiring a tool vendor that specializes in Notes applications.

Lotus said it has purchased Portsmouth, N.H.-based Edge Research, Inc., a 12-person firm that makes tools that let Microsoft Corp. Visual Basic programmers build Notes applications. Financial terms of the deal were not disclosed.

Lotus officials said they would build on Edge's work to develop and release a set of C++ class libraries (programming calls) that would be accessible through Visual Basic.

Lotus currently offers an application program interface (API) that gives programmers access to low-level Notes functions. But the API is generally regarded as hard to work with, said Heidi Dix, an analyst with market research firm Forrester Research, Inc. in Cambridge, Mass.

A set of C++ class libraries would ease the burden on programmers by letting them build relatively complex Notes functions through a single programming call.

One of Edge's products, called HiTest, already accomplishes a similar function by bundling together related Notes API calls. This lets a Visual Basic developer create a part of an application with just one call, rather than the 15 or 20 that might be required if the API was accessed directly.

Jeff Papows, vice president for Lotus' communications division, said Lotus will integrate HiTest with C++ class libraries that Lotus was already working on (*NW*, July 4, page 1).

An initial product based on the integration work could be ready within a few months, he said.

Lotus and several third-party companies have devoted considerable resources in recent months to bringing out easier programming tools for Notes developers.

In June, Lotus announced Notes Visual Programmer, a Visual Basic-like tool kit for building Notes applications.

Powersoft, Inc. and Gupta Corp. have released tools for using their application development kits to build Notes applications, while Lotus and Trinzic Corp. now offer tools for linking Notes users to back-end relational databases.

GOOD NEWS

Dix said the Edge purchase is good news for users because it shows that Lotus is committed to making Notes easier to use as a development platform.

Papows said Lotus would continue to work closely with third-party vendors as it seeks to broaden the overall Notes market. However, he acknowledged that Lotus is walking an increasingly fine line in dealing with such vendors as it brings out its own tools.

Edge President Mark Klein will continue to run the Edge operation. ☒

It's all relational

Brainstorm Technologies, Inc., of Cambridge, Mass., last week announced software for synchronizing data in Lotus Development Corp. Notes with relational databases.

Brainstorm's DataLink for Lotus Notes is based on a point-and-click interface and Microsoft Corp.'s Open Database Connectivity specification.

The software supports databases from vendors including Microsoft, Computer Associates, Inc., Gupta Corp. and Sybase, Inc.

The software is currently available only for Windows-based Notes clients, but a Windows NT version is under development. The tool can be used to synchronize data residing on all Notes servers, which currently include Windows, OS/2, NetWare Loadable Module and Solaris 1.X versions.

Until now, users have had to develop applications based on the complex Notes application program interface to synchronize Notes and relational databases, according to Brainstorm.

Pricing starts at $995 per license.

Brainstorm: (617) 492-3399.

BY ADAM GAFFIN

Front-end tool vendors ask middleware providers for help

BY KEVIN FOGARTY

Hounded by users needing to build applications that can run across multiple networks and operating systems, vendors of application development tools are turning for help to providers of message-oriented middleware.

Forte Software, Inc., Gupta Corp., Neuron Data, Microsoft Corp. and Powersoft Corp. are all said to be negotiating deals to integrate their products with middleware offerings from the likes of Digital Equipment Corp., Momentum Software Corp. and PeerLogic, Inc.

Software AG of North America, Inc. is also integrating its Natural development language with its internally developed Entire Network middleware.

Integrating links to middleware is a way to dramatically add to the usefulness of development tools, said John Mann, analyst at The Yankee Group in Boston.

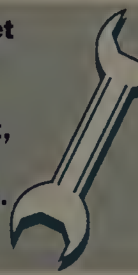
Middleware can drastically cut development time and extend the reach of applications by eliminating the need for developers to build in communications code for the range of environments in their networks, Mann said.

Instead, developers simply write to middleware application program interfaces (API) and rely on those products to translate calls or messages for different protocols and operating systems.

Tools that come tightly integrated with middleware, however, can save developers the

See Middleware, *page 38*

New tools let users build platform-independent, partitioned applications. Page 38.



Client/server nets may reduce need for TP monitors

BY BARB COLE

Cambridge, Mass.

According to users, transaction processing (TP) monitors will continue to play a role where mainframes exist, but they will be less useful in distributed client/server systems.

"It makes sense to embed your business rules and logic in the database server as opposed to putting them in either the client application or relying on a TP monitor," said Walt Hultgren, manager of information systems for Yerkes Primate Research Center of Emory University in Atlanta.

Doing this gives you more flexibility in distributing applications across a network, he added.

Hultgren's sentiments jibe with those of users surveyed by Forrester Research, Inc. recently for the market research firm's "OLTP Meets Client/Server" study. The report is based on interviews with information technology executives at 50 large companies.

Users said TP monitors are in danger of being replaced by new client/server technology, particularly database servers running stored procedures as well as middleware that will handle coordination between application components.

The study shows that most companies plan to use stored procedures in their on-line transaction processing (OLTP) applications for security, data integrity and data-centric application logic. Only 12% of the executives interviewed said they plan to use TP monitors without stored procedures.

As a result, the role left for TP monitors is to connect legacy time-shared applications to new client/server systems, the report said.

"In client/server, TP monitors are like a fifth wheel," said Bobby Cameron, senior analyst in Forrester's Software Strategy Service and author of the report. "TP monitors undermine client/server's inherent flexibility, mak-

See TP monitors, *page 38*

New tools can partition, distribute applications

BY KEVIN FOGARTY

Three new tools are scheduled to hit the market that will make creating and maintaining distributed applications easier.

All three will let users develop applications on one platform, then partition and deploy them on other platforms without changing the application code.

Australian firm Ochre Development, Inc., whose tool has been sold in Australia since the spring of 1993, released its tool in the U.S. last week, as did Forte Software, Inc. The third product is an update to Unify Corp. Vision that will integrate with transaction processing (TP) monitors, support remote procedure calls (RPC) that comply with the Open Software Foundation, Inc.'s Distributed Computing Environment (DCE) specification and let users partition applications on different platforms.

Ochre's tool, the Ochre Platform, lets users develop applications and distribute them across middleware-like code called abstraction layers, which reside on each net node. The layers are written to support particular operating systems, providing communication between Ochre application components and enabling users to move the components to different nodes without reconfiguring the rest of the application.

Abstraction layers are available for various versions of Unix, as well as for Windows and Windows NT. They support net protocols, including IBM's Advanced Program-to-Program Communications LU 6.2, Novell, Inc.'s IPX/SPX, Network Basic I/O System and TCP/IP.

Development tool roundup

Product	Price
Unify Vision	Not available
Ochre Platform	Developers' kit: $15,000; Run-time: $195 to $25,000
Forte	Developers' kit (5 developers, 10 users and training): $75,000

Ochre Platform and Forte are available now; Unify Vision is due in 1Q '95.

GRAPHIC BY TERRI MITCHELL

The tool uses the Pipes Platform middleware from PeerLogic, Inc. to help application components locate each other.

FORTE'S STRENGTHS

Positioned as a direct competitor and sharing many of the same features as Ochre is Forte, from Forte Software. Forte Software announced the product more than 18 months ago and has been developing it with $11 million worth of cash and additional engineering support from backers that include Digital Equipment Corp., Apple Computer, Inc. and IBM.

Originally slated to run only on Digital's OpenVMS, the tool will also run on Unix flavors from Data General Corp.'s, Hewlett-Packard Co., IBM, and Sun Microsystems, Inc. servers with Macintosh, Windows and Motif clients. Future versions of Forte will integrate with the DECmessageQ queuing and forwarding middleware and the ObjectBroker object request broker from Digital.

The next version of Unify's Vision tool will include an application program interface, code named Domino, that will allow it to link to TP monitors such as Novell's Tuxedo and IBM's CICS 6000 and Encina, as well as DCE-compliant RPCs.

It will also use a name service that will keep track of objects in a repository and will be able to dynamically search for objects locally or on a server.

©Forte: (510) 869-3400; Ochre: (415) 696-8680; Unify: (916) 928-6400.

Middleware

Continued from page 37

trouble of writing to APIs because that work is done in the integration process.

PeerLogic and Momentum, which seem to be garnering the most attention from tool vendors, both plan announcements of new alliances during the next few months.

Middleware integration is tooling along

Just released

- Ochre Platform running on PeerLogic's Pipes

Under development

- Powersoft's PowerBuilder, Microsoft's Visual Basic, Gupta's SQL Windows and four Neuron Data tools to run with Momentum's Message Express
- Forte to run on Digital's DECmessageQ
- Software AG Natural to run on its Entire Network

This week, Australian tool company Ochre Development, Inc. will release a version of its Ochre Software Platform that will run on top of PeerLogic's Pipes Platform middleware product. The Syndey-based Ochre opened its first U.S. office in Burlingame, Calif., three weeks ago.

At NetWorld+Interop 94 in Atlanta recently, Ochre demonstrated a prerelease version of its product that was integrated with Pipes.

Pipes is message-oriented middleware that delivers messages synchronously across nets. It includes a distributed network directory called the dynamic name space that keeps track of all the Pipes-enabled nodes on a net.

The product is an object-oriented development tool that lets users partition applications, store them as objects, and let them run across a number of servers and clients simultaneously.

Using PeerLogic's dynamic name space, users will be able to move partitions from one server to another with a mouse click, without having to tell the rest of the partitions about the change. Pipes' dynamic name space would notify the other components about the change, said Gary Aitchison, president and chief executive officer of Ochre.

Ochre will bundle Pipes in with future versions of its product beginning with a general release this week, Aitchison said. The combined products will cost about $15,000 per developer seat, and between $195 and $25,000 for run-time versions for platforms ranging from Windows-based personal computers to high-end Unix boxes, he said.

Momentum, meanwhile, is negotiating similar links with Microsoft's Visual Basic, Powersoft's PowerBuilder, Gupta's SQL Windows and Neuron Data's line of tools, according to Hub Vandervoort, executive vice president of strategic planning for the Needham, Mass.-based Momentum.

All those arrangements will be announced this year, Vandervoort said.

Momentum is working on updates to its Message Express middleware that will give users "visual middleware," the ability to drag and drop middleware communications capabilities into applications from graphical development environments, Vandervoort said.

Fledgling tool vendor Forte is also in on the middleware act.

A Digital engineer said Forte will integrate with both DECMessageQ for its store-and-forward capabilities, and with Digital's ObjectBroker for direct object-to-object communications. ◩

TP monitors

Continued from page 37

ing it difficult for companies to respond quickly to customers' demands."

TP monitors manage the transfer of data between multiple local and remote terminals and the applications that serve them. They are widely used in the mainframe environment.

"In the past, we needed TP monitors to protect the dumb data in mainframes. But now, server databases with stored procedures can fend for themselves," Cameron said.

Server databases support stored procedures, which let developers preprogram rules for managing data processing in the server. These products also have features for ensuring security and data integrity within the database.

With TP monitors out of the picture, Cameron said firms will construct client/server systems that utilize stored procedures, development tools for building server-based application components, and middleware to coordinate processing between application components. Firms will also split databases across multiple servers when possible, the report said.

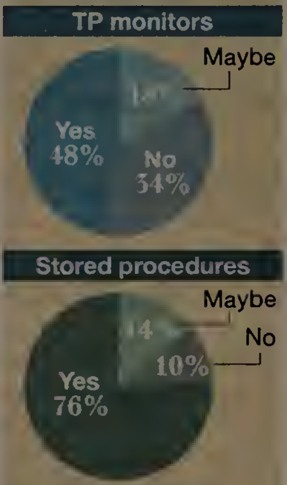
"Moving to client/server OLTP means that companies will have to change how they build these systems," Cameron said.

But pushing forward with client/server will not be cheap, the study said. Firms will have to make investments to boost the bandwidth of their LANs and will have to retrain COBOL and other mainframe staff.

©Forrester: (614) 497-7090.

OLTP options

Will you use TP monitors and stored procedures in your client/server OLTP applications?



Based on a survey of 50 users.

SOURCE: FORRESTER RESEARCH, INC., CAMBRIDGE, MASS.

DISTRIBUTED OBJECTS

Users are wary object-oriented net could be chaotic

BY ELINOR MILLS

Microsoft Corp. and IBM agree on one thing: Users want to be able to mix and match parts of applications on documents across platforms. But some users are worried partitioning applications will lead to chaos for them.

"I don't see how in a rapidly developing market you're going to provide an object-oriented environment," said Alan Merriam, information systems engineer for Lockheed Missiles & Space Company, Inc. in Sunnyvale, Calif. "There are going to be [challenges] in the future to make sure all the objects work together."

Microsoft's Object Linking and Embedding (OLE) technology allows users to insert chunks of data defined as objects from one application into another, such as moving a part of a spreadsheet into a word processing document. Changes in the original document are reflected in the secondary document.

IBM, Apple Computer, Inc. and Novell, Inc.'s WordPerfect Group have created the Component Integration Labs consortium, of which Lotus Development Corp. and Taligent, Inc. are also members. The group is developing a technology similar to OLE known as OpenDoc.

OpenDoc will be available in beta version late this fall. OLE 2.0 was released in 1993, OLE for Macintosh is expected this summer, and a beefed-up OLE Controls package is in beta.

USER VIEWS

While these technologies have promise, they will likely be a bane for administrators, Merriam said.

"I don't think it'll be extended into corporate development because historically businesses haven't had the time or the discipline to develop accurate models of their business, and you can't do componentization without an object model," he said.

Bill Kisselring, a manager in the Novell Applications Group, disagreed.

"It's easier to implement a change and to remain in control, as well as to remain on the desktop," he said. "We're going to remove a lot of that burden you have."

But other users also voiced concerns.

While partitioning applications gives users "freedom to create tremendous things," it will have drawbacks, said Jim Trezzo of Trezco Consulting in Foster City, Calif. "I'll have to be aware of which applications I happen to be using and which I can't use, and they all have software life cycles of their own."

Jeff Alger, senior product manager of OLE marketing at Microsoft, said the market will sort out many of the problems, and that Microsoft and third-party vendors will provide support. "There will be interoperability problems because we'll have different vendors developing different components that do similar things, but with different interfaces," he said.

He conceded, however, that there would be an increased burden on net administrators.

Karl Wong, an analyst at Dataquest, Inc. in San Jose, Calif., agreed with users that version control would be an issue, but said it is premature to be worrying about such issues. "It's putting the cart before the horse," Wong said. "Why worry about that stuff when we haven't even figured out the fundamental problems of the core technology itself. Most people are still grappling with integration and how to get applications to work together."

➻ Mills is a correspondent with IDG News Service.

E-MAIL CONNECTIVITY

User junks failed gateways, opts for standards-based backbone

BY ADAM GAFFIN

Tembagapura, Indonesia

Vendors of electronic mail gateways should steer clear of David McDonald — he won't hesitate to tell them what he really thinks of their products.

McDonald, manager of information systems for P.T. Freeport Indonesia, spent three years on the island of Irian Jaya trying to set up a gateway-based network to connect users of WordPerfect Corp.'s WordPerfect Office, Microsoft Corp.'s Microsoft Mail and the Internet.

Despite spending hundreds of thousands of dollars and going through several gateway products, McDonald was unable to get the system to the point where it could pass simple messages reliably, let alone deal with such issues as return receipts and directory synchronization.

GIVING UP ON GATEWAYS

Finally, McDonald gave up. He's junking the gateways and installing a network using the Unix-based Simple Mail Transfer Protocol and Post Office Protocol (POP). SMTP is a standard for distributing messages across a network, while POP handles messaging exchanges between a post office and client workstation.

"We couldn't get anything anywhere reliably," McDonald said. "I spent three years in that hellhole."

> **Despite spending thousands of dollars and going through several gateways, McDonald was unable to even get the system to pass simple messages reliably.**

Users could not get the return receipts they wanted on messages, directories would not synchronize across gateways, and messages sometimes simply failed to go through, especially if they had to traverse more than one gateway.

WHAT WENT WRONG?

The problem stems from the way different proprietary mail systems handle such issues. He said a single gateway between two of these systems would likely have been able to consistently translate message formats and directory updates, but that introducing two additional gateways simply created too much complexity.

McDonald never realized the trouble he would have. In 1991, P.T. Freeport's parent company, Freeport-McMoRan Copper & Gold of New Orleans, sent him to its copper mine here on the island of Irian Jaya. His goal was to replace an aging Telex system with E-mail to help support the shutdown of the mine, which had basically run out of copper after 20 years of operation.

The roughly 40 users decided that their most important consideration was a graphical user interface, but some wanted WordPerfect Office and some wanted Microsoft Mail. McDonald set about installing the packages, as well as gateways to connect the systems to each other and the Internet.

"It was the right choice from the interface point of view," even though it was the absolute worst decision on which to build a stable infrastructure, he said. But with only 40 users, it should not have made much difference.

But it did. Not long after McDonald's arrival, miners discovered a new copper deposit 100 times as large as the one the old mine was built on. Suddenly, instead of being a sleepy little operation getting ready to shut down, Tembagapura became the center of a huge new mining operation. The company allocated $7.5 million to set up a network to connect Tembagapura desktops with each other and with Freeport operations elsewhere in the world.

"That's when the E-mail began to unravel," he said.

To its credit, Hewlett-Packard Co. — one of the gateway vendors — tried to get its OpenMail messaging switch to work, but without success, McDonald said.

Today, Freeport is moving to a worldwide SMTP net, using POP software on Unix servers to deliver mail to user desktops. For Windows users, the company has settled on Spry Mail from Spry, Inc. of Seattle as its POP client.

Because the system relies on a standard for message and directory formats, there is little risk of message corruption, he said. ☒

Comments?
See "How to reach us" on the back page.

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EDITORIAL

Back to reality

People say it's what's up front that counts, but this week we call your attention to our redesigned back page featuring the new "Back to Reality" column by David J. Buerger (see page 63).

"Back to Reality" has its roots in a conversation I had with Lotus CEO Jim Manzi a few months back. As I often do when talking with readers and vendor executives, I asked, in closing, if there was something we could do to improve *Network World.*

Manzi was typically blunt: Cut through the BS to help readers understand what's real and what's hype. (I'd just spent a good deal of time listening to Manzi slash through what he perceived to be the BS surrounding Microsoft's workgroup strategy.)

Well, I like to think we're pretty good at that job already.

Our reporters have both the insight as well as the contacts that help them boil the news down to the essentials — good and bad. In addition, we've always taken a frank, hard-hitting stance in our many tests and reviews, Buyer's Guides, Opinions pieces, Reader Advocacy Force articles and Reality Check graphics.

But Manzi's comment got me thinking about a new type of column that would spark readers' thinking about breaking news. Enter "Back to Reality," which, in its beta form, went by the graceless code name "The BS Monitor" around here.

"Back to Reality" isn't a rumor column — there's enough misinformation being spread about the industry already. Rather, it's timely opinion: one informed observer's outspoken take on the news. You won't always agree with the column, but it will provoke you and — I'm hopeful — make you look at things in a new light.

What qualifies Buerger for this job?

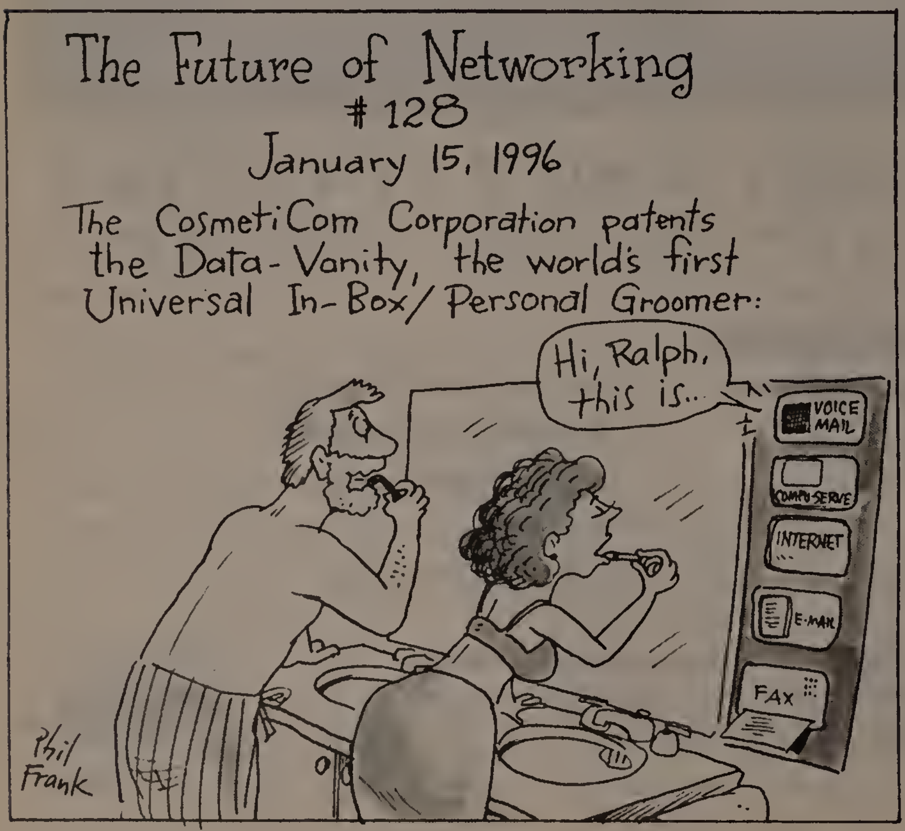
He's the former editor in chief of both *Communications Week* and *LAN Times,* and also oversaw test center operations and headed up network coverage at our sister publication *InfoWorld.* Buerger took top honors for editorial/opinion writing in the New York Business Press Editors 1994 Journalism Awards.

More important, his roots are in the user community. Before moving into the press, Buerger was director of The University of Santa Clara's Personal Computer Center, where he installed networks supporting hundreds of desktop users. He also spearheaded an effort to network 28 Jesuit colleges and universities throughout the U.S.

"Back to Reality" will share the back page with the popular CyberSpeak column — our virtual vox populi — and a new Contacts box that will make it easier for you to get in touch with us. Let Buerger and me know what you think as we cut through the hype.

JOHN GALLANT jgallant@world.std.com

TELETOONS FRANK AND TROISE

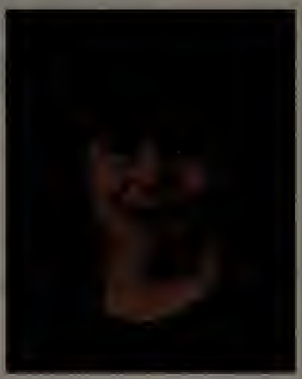


NETWORK CONVERGENCE

by Mary Johnston Turner

Plan now for fallout from new switched access deals

The move by long-haul carriers AT&T and Sprint Corp. to buy switched access services from competitive access providers such as Teleport Communications Group rather than the local exchange carriers (LEC) (NW, Aug. 29, page 1) is the beginning of the end of the LECs as we now know them. While this move could reduce users' network costs, it also has the potential to throw into disarray user enterprises that rely heavily on LEC technology and services.



The loss of substantial access charge revenue will rapidly destabilize the LECs, leading to an unraveling of the current economics that keep them profitable. If indeed the top carriers divert significant amounts of their access revenue to competitive access providers (CAP) or other alternatives such as cable TV companies, we are likely to see the merger of one or more major LECs, rapid escalations in the cost of local residential service and service dislocations to corporate users that will rival the impact of the 1984 AT&T divestiture in their severity. Wise users should begin now to develop contingency plans in the event their LEC is one of the victims.

Interexchange carrier (IXC) access charges — the fees the IXCs pay to the LECs for supplying call access and termination services — have been the last major high-margin, captive market available to the LECs. Typically, IXC access charges comprise about 30% of LEC revenues, but in some cases as much as 80% of the LECs' net income. About 90% of these IXC access revenues come from the top three long-haul carriers, with another 400 to 500 smaller IXCs making up the rest. The high margins from access revenues have helped to keep rate increases for residential and commercial local services to a minimum.

The major IXCs recognize their market power and have been awarding limited amounts of traffic to CAPs for some time. As a result, the LECs have reduced selected access charges to stay competitive. However, up to now the impact on LEC profitability has been just a drop in the bucket.

By targeting switched access, the IXCs and CAPs are declaring war on the LECs. Some LECs figure that with a loss of even 30% to 50% of IXC access charges, they will be out of business under current cost and market conditions. Given the concentration of the largest amounts of IXC access revenue in the hands of so few players, losses on this level could be realized almost overnight if even one of the IXCs gets serious about diverting large blocks of traffic.

How, then, will the LECs respond to this serious and near-term threat? Clearly, reducing their own access fees to competitive levels will be required. However, it is unlikely that the LECs as they are now structured can match the cost structure of the CAPs, which usually do not support nets that are as comprehensive and costly as those supported by the LECs.

As access minutes of use are siphoned off the LEC networks, the fixed costs of the LEC networks will change little, yet they will have to be paid for by the remaining customers, primarily local subscribers and intralocal access and transport area toll users. As LEC costs for local service rise, the alternatives supplied by cable TV and the new wireless personal communications services will look more attractive to users, even if quality of service is not as high as that provided by the LECs. This will divert even more traffic off the LEC infrastructure and result in even higher costs to the remaining LEC subscribers.

One of the most likely strategies for attaining substantial structural changes in LEC cost structures and competitive positions will probably be the merger of one or more LECs to create greater economies of scale and operational efficiencies. Beyond this, individual LECs may find that specialization in specific functions, which can be supplied within their own service areas and outsourced to other carriers, will help to drive down costs even further. For users, this might mean that different support services are handled by different management centers using different business processes. The difficulty associated with getting one-stop network management and account support will intensify.

Finally, LECs may have to limit the range of services they supply, opting to leave selected service offerings to niche players. By limiting the range of services, the LECs could make headway in reducing their overall costs as they optimize for those services that drive the greatest volumes onto the network. In this type of situation, users might find that they cannot buy all the services they need from their LEC and are forced to work with multiple suppliers to get all the local services they require.

The LEC shakeout will most likely cause severe service disruptions as service areas, service offerings and supporting management systems, procedures and personnel are realigned. Network managers will be reminded of the slowed service delivery and repair cycles that resulted from the AT&T breakup as AT&T and the LECs were figuring out new ways of doing business with one another and AT&T was getting used to a host of new business processes that cut the LECs out of traditional AT&T work processes.

As the LECs struggle to come to terms with the new economics and market structure realities, users will need to look out for their own best interests. And, like the IXCs, users may begin to find that CAPs and other local alternatives can, in fact, do the job efficiently and economically, at least in some cases.

The unraveling of any one LEC could occur quickly, so now is the time to develop an understanding of potential risks to your net and formulate contingency plans. Organizations most at risk are likely to be those that rely on LECs to supply new or advanced technology. When push comes to shove, the LECs' focus will be on saving the core business, and the new services may suffer as a consequence. Contingency planning should include a review of which services and technologies are likely to encounter weak support in the event of LEC financial problems and identification of alternative suppliers or backup strategies.

Even if you believe your LEC will be one of the long-term survivors, having a plan for overcoming long lead times for new services and extended repair intervals will help your organization navigate what will be a rocky passage for the industry.

Turner is a principal with Northeast Consulting Resources, Inc., a Boston-based consulting company. She can be reached at (617) 654-0619 or via the Internet at turner@ncri.com.

USER FORUM

by Douglas Welch

How to make universal in-boxes a reality

By and large, users have greeted this summer's announcement of forthcoming specifications for a universal in-box (*NW*, July 18, page 1) with much hope but low with expectations. Most users who spend more than a few minutes riding the electronic highways of the world would gladly pay for software that would enable them to collect all of their data — be it fax, voice mail, news group postings or electronic mail — with one easy-to-use interface.

Unfortunately, due to most vendor committees' ineffectiveness in developing working or realistic specifications, users will surely not be holding their breath.

A universal in-box specification should have been created years ago. Without it, remote communications will never become feasible, and the entire communications industry will be stalled. Electronic communication was designed to enhance productivity, but in some cases it might actually be a detriment. It is up to vendors to drive their industry forward by applying new technology and cooperating on interoperable communication standards. Users have been waiting too long for them to catch up.

If the universal in-box is to become a reality, the vendors working on the specification must keep several points in mind:

First and foremost, the vendors must realize that time is of the utmost importance. The specification must be delivered quickly. Users are tired of developing do-it-yourself solutions for their communications needs. Some are even turning away from electronic communication due to its drain on finances and productivity. If vendors want to ensure the growth of their industry, they must prove their dedication to making their products simpler, faster and more full featured or users will abandon them.

Secondly, any specification must be grounded in today's technology while providing for the easy integration of future communication enhancements. A specification for linking E-mail, voice mail and fax will be good, but it will also be too little, too late. The interoperability spec must include specific methods of dealing with video and audio. The future of communications is distributed and wireless.

Systems must be able to deliver a user's data from anywhere to anywhere if it is to be successfully adopted by a majority of vendors. Users must be able to make use of whatever connection they can establish, whether phone, wireless or network.

Every group should have a well-defined goal before setting out, and hopefully, the vendors working on the in-box spec will consider the following scenario a worthwhile goal as they continue their discussions.

With the advent of cellular phones, smaller and more portable computers and wireless networks, any communications standard will have to address remote access to personal data and public information.

Personal digital assistants (PDA) are still ahead of their time because there is no easy way to allow them to access users' data that is spread across many different on-line systems and computers. The predicted PDA explosion never happened because communications technology lagged behind. PDAs could and should become the focus of any universal in-box specification.

Users should be able to carry a device that can access their data from any location. Intelligent communications would ensure that whatever the connection, users could access data from their home computer as easily as from their company database. The data wouldn't be stored on the PDA but the device would contain enough information to allow it to gather the information from distributed sources without user intervention.

Whether this happens through the use of agents or some other methods is moot until the communications infrastructure and a working interoperability spec are in place. Users don't want to have to worry how the data moves; they just want it to move where they want it, when they want it.

All this may seem to be wishful thinking in today's world, where it is difficult to get one E-mail system to talk to another, but it must happen. Users have been dreaming of this for several years. Without some form of across-the-board interoperability specification, networking and on-line service vendors will find their industries stalled. There must be cooperation from vendors in order to establish this common foundation on which they can all stand. Without it, they will find themselves slipping one by one into the quicksand of the status quo that could easily swallow them.

➜ Welch is a support analyst for a major entertainment corporation in Los Angeles. He can be reached via the Internet at 76625.3301@compuserve.com.

Letters

Beautiful Mosaic

Regarding your article "Spyglass captures Mosaic licensing" (Aug. 29, page 4):

I have been using Mosaic for a while, and I think it is one of the slickest Internet tools I have ever seen. I've seen it running on Microsoft Windows, the X Window System and the Macintosh. The PC and Macintosh versions are both 2.0, but the X Window System version is 2.4.

Regarding Mosaic moving into commercial development, your article didn't mention whether this entails the PC, Macintosh or all versions. I can see where there is so much more that can be done to expand it.

I had envisioned a different destiny for Mosaic. I hoped maybe Nintendo or Sega might have a Mosaic "game" for their next-generation boxes that would communicate through a cable TV box to the Internet as well as other interactive services. Oh well.

Chris Tenaglia
Systems manager
Medical College of Wisconsin
Milwaukee

Editor replies: Spyglass, Inc., which holds the master license to Mosaic from the National Center for Supercomputer Applications, licenses Mosaic binary code for Windows, the X Window System and Apple Computer, Inc.'s Macintosh to a number of vendors. According to Spyglass representatives, Digital Equipment Corp. offers the X Window System and Windows versions of Mosaic; O'Reilly & Associates, Inc. offers all three; FTP Software, Inc. offers Mosaic for Windows; Firefox Corp. offers Macintosh and Windows Mosaic, with X Window System a possibility later; and IBM offers Mosaic for Windows.

Digital: (508) 486-2562; O'Reilley: (510) 883-7220; FTP Software: (508) 685-4000; Firefox: (800) 230-6090; IBM: (919) 254-6788.

Translation, please

Your review of ATM switches has a sidebar titled "Desktops bog down ATM nets" (Aug. 22, page 45). In the fourth paragraph, there is a line that reads, "We performed cp, udp and rr file transfers on both the Sun and Digital platforms."

Could you please explain what those file transfers actually were? For example, what is a cp file transfer? Is it a Unix cp command acting on an Network File System-mounted file system? What is a udp file transfer? Is it the transfer of files with Trivial File Transfer Protocol? Same question for rr file transfers. What are those?

Rick Jones
Network performance engineer
Hewlett-Packard Co.
Cupertino, Calif.

Author replies: CP should have appeared as TCP. TCP is, of course, not a File Transfer Protocol per se, but a popular transport-layer protocol. UDP refers to the User Datagram Protocol, a connectionless transport-layer protocol used on the Internet that is also part of the TCP/IP suite. RR is a TCP Request/Response test that involves sending data between two Unix hosts. Parameters that can be varied include specifying, in number of bytes, Local Send Socket size, Remote Receive Socket size, request size and response size. Measured or reported values from the tests include elapsed time for transmission (in seconds) and transfer rate (in bit/sec).

If you have any additional questions, contact me, Stan Bush, at seb@boulder.colorado.edu.

See Letters, *page* 42

Letters must include your name, title, company, city, state and a daytime phone number for verification. All letters are subject to editing for space and clarity. Letters can be sent to us via mail to Editor, *Network World*, 161 Worcester Road, Framingham, Mass., 01701; via fax to (508) 820-3467; or via the Internet to network@world.std.com.

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Help desk

Continued from page 2

lishing). This book covers the history of encryption and the different techniques used, and includes a disk with executable code and a secret message to decrypt. It costs $24.95. To order these books, call the NCSA at (717) 258-1816.

Benjamin Wright, an independent lawyer based in Dallas specializing in electronic commerce, adds:

Whether or not a cryptographic digital signature is legally effective is a complex question. Legal results may vary greatly depending on the circumstances, including the laws that apply to the transaction in question, the methods used to implement the signature, the records that are kept, etc. There is little in the way of specific court cases or legislation on the topic. However, there is substantial reason for optimism that many different methods for signing electronic transactions (cryptographic digital signatures being just one) can, in many cases, be legally effective. You should consult your lawyer.

For more information on digital signature legislation, you might also want to refer to my book, *The Law of Electronic Commerce: EDI, Fax and E-mail* (Little, Brown and Co.). This 750-page book includes a 1994 supplement and costs $125. To order the book, call (800) 331-1664.

Can you tell me if ISDN service is available in my area?

Mike Steger, St. Louis

NW found that Southwestern Bell offers ISDN in your area. For availability, contact your local holding company.

For more information on ISDN availability, tariff summaries, installation and ordering, call Intel Corp.'s ISDN Connectivity Information Center (ICIC) at (800) 538-3373, Ext. 208. ICIC also offers general information on ISDN, including concepts and commonly used terms.

Letters

Continued from page 41

Bruised Apple

As a long-time Apple Computer, Inc. Macintosh user and advocate at both work and at home (I got my first Macintosh in the spring of 1984 and helped found and later served as the chairman of my division's Macintosh user's group for a number of years) I want to pass an "attaboy" to Scott Bradner for his column "'Stupid is as stupid does'" (Sept. 5, page 17).

Bradner has pointed out a self-defeating attitude that Apple projects. First, it was their supposed need for a 42% before-tax profit, then it was their inability to license the OS/Toolbox ROM in order to broaden the market opportunities for third-party developers of compatible hardware, and now it's $135 a copy for enabling software.

This is jarring, especially since I highly value other attitudes they project: putting ease-of-use and user productivity first, ensuring that properly coded applications can still run on later generation machines, ease of local networking and so on.

I have remained loyal because I prefer to work in the Macintosh environment given the other available alternatives. I have already decided that I won't upgrade to System 7.5 until I find some need that simply can't be satisfied by System 7.1 or System 6.0.5.

Dick Rucker
Principal engineer
Mitre Corp.
McLean, Va.

Food for thought

In your Sept. 5 issue, Mark Gibbs recounted a fable about the Little Red Hen (LRH). In my opinion, he left out a few details. Here is what *really* happened.

Once upon a time, LRH (aka Bill Gates) became a junior partner with a large company named Idiot Bread Maker (aka IBM). After several years of a profitable partnership and pretty good bread, LRH took exception to a new recipe and said, "Kiss my wheat! Our association is over and I'm taking the established customer base and my patented recipe with me. I have a super pastry that will sell better than anything you have."

LRH then proceeded to tell all third parties, "It's business as usual. If you want to add butter, jam, peanut butter or *anything* to my bread, you will have to pay a sizable fee and resell it only according to my rules. No fee or no obedience means no piece of the pie — I mean bread."

The Justice Department has decided that this was unfair practice to third-party developers, and ultimately, end users. I agree.

Joy Zocco
Data processing systems analyst
Connecticut Department of Public Health and Addiction Services
Hartford, Conn.

On the money

Mark Gibbs' column "Bill, the Little Red Hen" (Sept. 5, page 20) was right on the money about Microsoft Corp. and its detractors. Microsoft products contain the right combination of price, function, attractiveness and ease-of-use with excellent marketing strategies to gain and retain customers, and have made Microsoft the industry standard. Those who think whining or litigation are the cure for market realities should stop wasting their talents, our time, court dockets and taxpayer dollars.

When Microsoft's competitors produce something obviously better and market it brilliantly, then the weaning from Windows will begin. But don't take too long. Bill Gates won't tolerate his people whining about Microsoft's demise.

Robert Huxley
Materials systems specialist
New England Business Service, Inc.
Groton, Mass.

More go-getters needed

Bravo to Mark Gibbs for his column "Bill, the Little Red Hen." I have read much on the Microsoft antitrust suit and am very glad to see someone else recognize the fact that this country was created by the very spirit that Gates is in trouble for.

May we see more go-getters like him to drive the computing industry, instead of slogs who hold technology advances down and promote sluggish growth.

I knew there was a reason I always read Gibbs' columns in *NW*.

John Gordon
Network adminstrator and consultant
Gordon Consulting Services, Inc.
Salt Lake City

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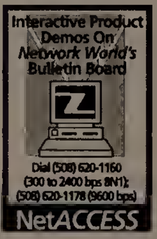
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Grand Junction proves it has a FastSwitch

Nbase, Net Peripherals and **Retix** fare well in some tests, but the **Grand Junction** device stands out as best all-around unit.

BY J. SCOTT HAUGDAHL

Grand Junction Networks, Inc.'s FastSwitch 10/100 AG may have emerged as the best all-around performer in our latest examination of Ethernet switches, but three other products revealed unique qualities that could benefit user nets, too.

In an examination of three cut-through mode units and one store-and-forward offering, the FastSwitch demonstrated its ability to support so-called private Ethernets, or dedicated 10M bit/sec connections, to desktop users. And it did so while sporting one of the lowest cost per ports for any switch we've tested thus far.

Our probe of Network Peripherals, Inc.'s EIFO Client/Server Switching Hub revealed a clever way to hook units via Fiber Distributed Data Interface, while Nbase Switch Communications Corp.'s NH-203A proved to be a speed demon of sorts. Despite its throughput results, users should tread carefully since the Nbase switch uses a quirky flow control feature that may, in some instances, torpedo performance. (Nbase says it is about to ship the NH-204AT, which will eventually replace the other unit.)

Retix's SwitchStak 5400, meanwhile, met or exceeded the performance of other store-and-forward offerings tested so far, and its ability to let users group ports at will makes it possible to devise virtual LANs on the fly.

All of the switches submitted to a similar battery of latency and throughput tests we used for our earlier switch review (*NW*, July 25, page 47).

The latency of a switch is measured from the time the first bit of a packet is received on one port to the time that same first bit is transmitted on a second port. Latency is important, as it acts as a governor on two-way transactions. For example, tests will show that most switches can pass 64-byte Ethernet packets through at wire speed in one direction. However, if there is latency and one packet is a send packet from a client and one is a receive packet from a server, there is a minimum of 2x latency in between, thus lowering effective throughput. Protocols such as NetWare's burst mode protocol and File Transfer Protocol using IP windowing can help alleviate but cannot eliminate the effect of latency. If there are multiple hops, or switches, between them, latency is even more of a factor.

Using our workstation/server test setup, we measured the round-trip delay of several NetWare Core Protocol packets on the wire. To measure latency, we used a command packet (where a workstation sends out a request to the server) and its corresponding response packet (where the server responds back to the workstation).

The FastSwitch, the NH-203A and the EIFO all operate in cut-through mode, where switch latency is independent of packet size. A forwarding decision is made as soon as the destination address is received or the first 64 bytes of the packet is received in fragment-free mode. The SwitchStak operates in store-and-forward mode, thus switch latency depends on packet size since the entire packet is received before forwarding. A minimum-sized 64-byte Ethernet frame is transmitted in 6.4 microseconds (considering a 64-bit preamble) plus a 9.6 microsecond gap time plus 51.2 microseconds (64 bytes x 8 bits/byte) for a total of 67.2 microseconds. Thus, in a store-and-forward switch, a 64-byte packet has a minimum latency of 67.2 microseconds. That means applications that use large Ethernet frames are better off with a

Continued on page 46

HOW WE *did it*

In our first review of switches, we created a set of benchmarks that we feel are a bit more realistic to real-world networking scenarios than tests that, for example, consider only one-way throughput. We employed that setup again in this review. Keep in mind that our benchmarks are but another set of metrics to consider when evaluating Ethernet switch technologies and vendors. Any given metric should never be the sole consideration when selecting a switch.

Our first test methodology consists of a simple bulk file transfer across dedicated Ethernet segments and a dedicated port-to-port switch. In other words, the workstation segment and server segments have no other traffic, and only two switch ports are utilized (one for the workstation and one for the server.) This allows us to measure with consistency the lowest achievable switch latency and the highest possible file-transfer throughput. The workstation we used was a 66-MHz 80486 PC with a 3Com Corp. 3C509 adapter with NetWare Virtual Loadable Modules, while the server was an EISA-based 66-MHz 80486 Compaq Computer Corp. device running NetWare 3.12.

Our second test setup utilized the Alantec Corp. PowerBits traffic generator. The test script was set up such that every packet sent through a switch was also acknowledged with a 64-byte packet via the reverse path. This tests the maximum rate at which the switch can handle a data packet sent from one port to another, with a short return acknowledgement packet on the reverse path, thus simulating a one-to-one client/server windowing protocol. Two tests were conducted with this scenario: throughput and packet loss rate, both iterative tests that are supplied with PowerBits. A total of four switch ports were utilized, two for sending and two for acknowledging (or acking). For a more thorough description of this setup, refer to the initial Ethernet test review (*NW*, July 25, page 47).

NET *Result*

Product	**FastSwitch 10/100 AG**	**NH-203A**	**EIFO Client/Server Switching Hub**	**SwitchStak 5400**
Key findings	▶ Best performer for private Ethernets. ▶ Lowest cost per port of all switches tested. ▶ Offers selectable cut-through and store-and-forward modes.	▶ Offers adjustable latency. ▶ Scored lowest latency of switches tested. ▶ Flow control jamming scheme may hurt throughput.	▶ Offers a clever way to connect units via FDDI port. ▶ FDDI ports can be used for different purposes.	▶ Has the ability to assign ports to virtual LANs. ▶ Proprietary 175M bit/sec module links 8 SwitchStaks.
Switch type	Cut-through or store-and-forward	Cut-through	Cut-through or store-and-forward	Store-and-forward
Configuration tested	24 Ethernet ports 5 100M bit/sec fast Ethernet ports	4 AUI Ethernet ports Optional 10Base-T ports	12 10Base-T ports 1 FDDI port	8 10Base-T ports
Vendor	Grand Junction Networks, Inc. Fremont, Calif. (800) 747-3278	Nbase Switch Communications Corp. Chatsworth, Calif. (818) 773-0900	Network Peripherals, Inc. Milpitas, Calif. (800) 674-8855	Retix Santa Monica, Calif. (800) 255-2333
Price as tested	$7,250	$3,200	$7,495	$3,995

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Continued from page 46

cut-through mode Ethernet switch design.

Of the three cut-through switches tested here, Nbase's NH-203A turned in the lowest latency, at approximately 12 microseconds. The EIFO followed at about 38 microseconds, with FastSwitch testing at around 44 microseconds. Usually, this might mean the shorter the switch latency, the smaller the response time of the transaction or the application. But the equation is more complicated due to switch buffer sizes, so actual response time may vary. As expected, for cut-through operation, the latencies were not affected by packet size.

Maximum switch throughput
(packet/sec)

Switch model	Packet size (bytes)					
	64	128	256	512	1,024	1,518
FastSwitch	14,879	8,443	4,527	2,347	1,196	811
EIFO	14,591	8,325	4,527	2,349	1,196	811
NH-203A	3,769	4,421	3,530	2,333	1,076	790
SwitchStak	3,844	3,218	2,437	1,652	1,054	794
Maximum	14,880	8,445	4,528	2,349	1,197	812

Maximum number of packets forwarded without losing a single packet.

SOURCE: PINE MOUNTAIN GROUP, ST. PAUL, MINN.

The store-and-forward SwitchStak latency was equal to the packet reception time (67.2 microseconds for 64-byte packets) plus approximately 32 microseconds for the forwarding decision time. In other words, the total latency is the (variable) packet time — depending on packet size — plus the overhead (fixed) time of 32 microseconds.

Next, we set out to determine how latency affects workstation/server transactions. In this test, we transferred a 2.3M-byte file from the workstation to the server. We repeated the test multiple times to account for any write caching by the server. Keep in mind that other benchmarks may show switches being able to simultaneously transfer data between all ports, at or near wire speed, depending on packet size. What our benchmark illustrates is the best you can expect on any given port for a real set of transactions -- in this case, a file transfer.

With a direct connection to the server — meaning there is no intervening switch — the 2.3M-byte file was transferred in 3.84 seconds. This served as our baseline.

With the NH-203A turning in very low figures in our latency test — in fact, the NH-203A turned in the lowest latency time of all of our cut-through switches tested to date — we anticipated little impact on our file transfer test. Indeed, the switch tested very fast, at 3.86 seconds, or an overhead of less than 1%. Again, this suggests low response times, but other factors such as buffer size and segment traffic could influence the results. Fast-Switch followed at a low 3.92 seconds (2% overhead), while EIFO and SwitchStak were virtually tied at 4.09 and 4.11 seconds (both close to 7% overhead), respectively. SwitchStak had a respectable figure for a store-and-forward design.

POWERBITS CRUNCHING

The two PowerBits tests conducted were throughput and packet-loss rate. These are iterative tests that are supplied with every PowerBits unit. The send-packet sizes we selected were 64, 128, 512, 1024 and 1518 bytes. The tests use four switch ports with a total run-time of 10 seconds for each test.

The PowerBits throughput test determines the maximum packet rate that can be forwarded through the switch without losing a single packet. It runs a series of stream tests, performing a binary search over the range of possible throughput rates.

For this particular PowerBits test, cut-through switches FastSwitch and EIFO were just one packet shy of full bandwidth with 256-byte packet sizes and higher, with FastSwitch barely edging out EIFO on the smaller 64- and 128-byte packets (see Figure 2, this page). FastSwitch undoubtedly benefited from its generous 3M-byte buffer to compensate for overloading during the 10-second test.

The other cut-through switch, the NH-203A, fell far behind, turning in numbers closer to those of store-and-forward products. During the test, we noticed that the collision indicators on the NH-203A were blinking furiously during heavy loading. This proved that the NH-203A was transmitting jams, just as advertised (see story, this page). Recall that the PowerBits is set up to send an acknowledgement packet for each packet received. The sender, however, does not wait for the ack before sending the next packet. Since the NH-203A can't buffer packets, it has to jam one port or the other when packets arrive at the same time.

Thus, the net affect is severely degraded throughput, in this case down to approximately 25% of Ethernet's capacity for small packets. What it means is this product may be suited for applications with little or no contention between end ports. But it will unlikely hold up well in a scenario where many nodes vie for bandwidth.

Whether you will encounter this phenomena in a real network depends on how your protocol behaves: whether burst or windowing protocols are employed, where multiple packets are sent for each request or ack; what the typical packet sizes are; and how many workstations are attached to each segment. This is a complicated equation. To help, you should analyze your existing transport and application level protocols with a protocol analyzer.

Switch throughput in a client/server environment
(packet/sec)

Switch model	Packet size (bytes)					
	64	128	256	512	1,024	1,518
FastSwitch	14,880	8,445	4,528	2,349	1,197	812
EIFO	13,392	7,600	4,528	2,349	1,197	730
NH-203A	2,976	4,220	2,716	2,114	1,077	730
SwitchStak	2,976	2,530	2,263	1,409	847	730

Maximum number of packets transmitted without loss of a single packet.

SOURCE: PINE MOUNTAIN GROUP, ST. PAUL, MINN.

The SwitchStak throughput numbers compare favorably with the cut-through NH-203A, but lag behind other store-and-forward switches (Power-Hub and MultiNet) as tested in our earlier review. SwitchStak did much better in the packet loss rate test, however.

PACKET LOSS EXAMINED

The second PowerBits test, the packet-loss rate, measures the number of packets that the switch loses when it is offered loads between 10% and 100% of the theoretical maximum rate, in 10% intervals. For this test, two streams transmitted data while two streams were acking, with 64-byte packets. The tests were iterated across the same packets sizes as the throughput test. This test attempts to simulate a real-world client/server scenario where, for instance, a client is acking a series

The cast of switch characters

Grand Junction Networks, Inc. FastSwitch

The Grand Junction FastSwitch 10/100 AG is a large, stand-alone or rack-mountable unit that is unique in several ways. First and foremost, the switch is marketed as providing private Ethernets or dedicated 10M bit/sec bandwidth to every node — meaning a single station is dedicated to one port. The switch contains 24 Ethernet ports and five 100M bit/sec fast Ethernet ports (Grand Junction was the initiator of the emerging IEEE 802.3 100Base-TX standard). All Ethernet ports can accommodate one Ethernet address, limiting this switch strictly to workgroup applications.

To connect the switch to a backbone, a single dedicated 100M bit/sec Ethernet port may be used that accommodates thousands of addresses. The other four 100M bit/sec Ethernet ports are shared, lending themselves for connections to servers. Grand Junction also offers another FastSwitch model that contains 24 Ethernet ports and one port that can be connected to a standard 10M bit/sec backbone. The backbone port may also be switched to 100M bit/sec fast Ethernet mode.

Another unique feature of the FastSwitch is a choice of forwarding modes: Fast-Forward, FragmentFree or Store-and-Forward. The first two are cut-through modes. FastForward begins forwarding after the destination address is read. FragmentFree waits until 64 bytes are received, which is the maximum collision zone in which a sending station on an Ethernet can detect a collision. Thus, no fragments will be forwarded.

Finally, the Store-and-Forward option works like a multiport bridge and is automatically used when transferring packets to and from a 100M bit/sec port.

Nbase Switch Communications Corp. NH-203A

Nbase's NH-203A is a slim, stand-alone or rack-mountable four-port Ethernet switch with AUI ports. Models are also available with 10Base-T ports. The switch operates strictly in cut-through mode, offers SNMP for inband or out-of-band SNMP monitoring and is capable of full-duplex switching. The NH-203A also has a number of unique characteristics. For example, the packet latency is configurable from 10 to 60 microseconds, allowing runts — substandard Ethernet frame sizes — to be filtered like the fragmentfree mode of the FastSwitch 10/100.

The NH-203A also has a unique flow control feature. If a packet destined for a busy port of a switch has arrived, the switch may take several actions: It may decide to buffer the packet (thus, momentarily reverted to a store-and-forward mode of operation), it may drop the packet or it may handle it some other way.

In some cases, the NH-203A will send Ethernet jam messages (a random 32-bit sequence of 1s and 0s) onto the source segment, interrupting the transmitting switch and causing it to resend the packet after its random back-off time. The packet being received by the switch is then sent following the jam.

This is an interesting approach to flow control, but you should be careful if there are multiple NH-203As in a tree configuration or cascaded together. Using jamming for flow control, even on a single switch, has an interesting phenomenon that reveals itself in our PowerBits testing.

Network Peripherals, Inc.
EIFO Client/Server Switching Hub

The Network Peripherals EIFO is a slim, stand-alone or rack-mountable unit containing 12 switched 10Base-T Ethernet ports and one Fiber Distributed Data Interface connection. As many as 1,024 Ethernet addresses are supported per Ethernet port, with no addressing limitation on the FDDI port.

The FDDI on the model we tested supports an FDDI single-attached unshielded twisted-pair connection. Other models are available that support FDDI fiber and dual-attached nodes, as well as an optional four-port FDDI concentrator module to provide additional FDDI connections.

Of the four units tested, EIFO is unique in offering an FDDI port that can be used for several different purposes. A server can be directly connected to the port, offering a 100M bit/sec pipe to the switch. Or, the switch can be connected to an existing FDDI backbone as a transport to a second EIFO. The FDDI port may also be used as a high-speed link between EIFO units, allowing them to be stacked in the same rack or placed several kilometers apart (with fiber).

Retix SwitchStak 5400

The SwitchStak 5400 is a slim, stand-alone or rack-mountable unit containing eight switched 10Base-T Ethernet ports (with one port switchable between 10Base-T and AUI) and an optional proprietary 175M bit/sec StakBus module that is capable of linking up to eight SwitchStaks. The StakBus utilizes dual counterrotating rings supporting distances of up to 2 km between units using fiber; copper connections are also supported for more limited distances.

SwitchStak allows any combination of ports to be grouped together to form a virtual or logical network.

The Retix approach gives the user the flexibility of having unit-by-unit (standalone) workgroups or to define the workgroups logically within each unit or cluster of units (connected together via StakBus). By having the ability to connect as many as eight units, the user has 64 ports from which to define virtual networks, without having to recable the units.

of reply packets from a database server.

Once again, FastSwitch shined, coming out on top in handling all packet sizes at full wire speed (see graphic, page 46). The SwitchStak, the only store-and-forward switch in the table, met or exceeded the performance of the other store-and-forward switches from our first review.

EIFO was closer to wire speed than what appears in the table since, as previously noted, the PowerBits test measures packet-loss rates in increments of 10%. For example, at full bandwidth, EIFO dropped only four packets at the 1518-byte packet size and less than 1% of the smaller packet sizes (64- and 128-byte packets). On many of the high bandwidth tests, the NH-203A only dropped one to seven packets. SwitchStak dropped only four 1024-byte packets at the higher 1077 packet/sec rate. Remember, this table shows, to the nearest 10%, the maximum packet rates sustained more than 10 seconds without packet loss.

SWITCHING IS GRAND

For applications that can benefit from private Ethernets (10M bit/sec bandwidth) to every workstation, the tests proved the Grand Junction FastSwitch is hard to beat. It is best suited for applications that are balanced across the switch or that talk to one or more servers with the 100M bit/sec fast Ethernet port. The cost per 10M bit/sec switched Ethernet port is $375, making it the lowest of the switches tested thus far.

The flexibility of the built-in EIFO's FDDI connections allows it to be used to stack EIFOs, connect EIFOs to an existing FDDI backbone, or provide a direct 100M bit/sec connection to a server. By offering both 100M bit/sec copper and fiber single- and dual-attach options, the EIFO user can choose between the cost efficiency of a single-attach copper connection, which may be just fine in a wiring closet, or fault tolerance offered by FDDI's dual counter rotating rings. EIFO is priced at a modest $600 per switched Ethernet port.

The Nbase switch is a speed demon given the right application. One must carefully analyze the protocol and load that will be applied to the switch to ease fears of possible degradation, which showed up in our PowerBits throughput test. At a cost of $800, the NH-203A is one of the more expensive switches tested here.

The SwitchStak offers modest store-and-forward performance — it did well in our file transfer benchmark — with the added flexibility of assigning groupings of ports to virtual LANs. Like the EIFO switch, the SwitchStak may be connected via a high-speed fiber link in close proximity or across larger distances, with dual counter rotating rings for fault tolerance. Unlike EIFO, however, the SwitchStak fiber connection is proprietary, offering backplane-like services between switches. SwitchStak squeaks in at just under $500 per switched Ethernet port.

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A tale of two switch modes

When examining Ethernet switches, it is important to consider the two major switching technologies on the market today: cut-through and store-and-forward.

In a cut-through design, packets pass from one switch port to another with very little delay (latency), since the packet is forwarded to a destination port before it is completely received from the source. Packets with bad cyclic redundancy checks (CRC) will pass through, but collisions will not since virtually all collisions occur at or before the first few bytes in the packet. If the destination port is of a different speed than the source port, such as in passing a 10M bit/sec frame from a workstation to a server on a 100M bit/sec port, then this technique won't work. If port speeds are mixed and matched, then the switch must resort to a store-and-forward approach.

A store-and-forward switch receives the entire packet before forwarding to another port. Although CRCs can be checked, and differing topology speeds can be accommodated, latency is compromised, especially with large frames.

Perhaps the best compromise is to implement a switch architecture that does both — that is, it buffers packets if the cut-through port is busy. This way, temporary overloads are accommodated without packet loss, and buffers are flushed at 10M bit/sec (or whatever the target network speed is), making any delay short and temporary. The switches from Grand Junction Networks, Inc. and Network Peripherals, Inc. reviewed here do just that.

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In a Nutshell

A **PRIMER** *on emerging technologies*

SIDF finds common ground for LAN backup

BY DORI ABELE

Managing data storage and backup in today's client/server environments is no small feat. The swelling ranks of workstations being added to the network plus the growing use of sophisticated graphical applications are causing network data capacity requirements to grow by leaps and bounds. Complicating matters, heterogeneous corporate nets that handle a variety of operating systems and file formats are becoming the rule, not the exception.

System Independent Data Format (SIDF), an emerging LAN backup standard, will help network administrators cope with the growing complexities of managing data storage. SIDF simplifies LAN backup by creating a single data format for backup purposes, enabling users to archive data to any number of different devices. It also provides the means to restore that data to a wide variety of clients across multiple hardware and software platforms.

SIDF's logical media format standard for small computer system interface (SCSI)-based devices allows users to mix and match tape, media and files among different backup software packages. Using SIDF-compliant products enables all nodes such as Windows- and Unix-based clients to be backed up to any server on the network. For example, data stored with a Unix backup program can be read by a Novell, Inc. NetWare-based device and vice versa.

IN THE BEGINNING

SIDF sprang from Novell's Storage Management Services (SMS), a set of application program interfaces (API) for backup and storage management application development in NetWare environments. The third level of the three-tier SMS architecture — the SIDF component dealing with data exchange among storage media — was released by Novell to a consortium of data management vendors in 1992. The 50-plus members of the SIDF Association broadened the reach of the SIDF specification to cover environments other than NetWare. Today, SIDF Version 1.01 enables users to back up files to any server in a heterogeneous environment.

The consortium's work is far from done, however. The SIDF Association continues to wrestle with the fact that several aspects of SIDF, originally defined for Novell, need modification. For example, the current compression algorithm registered with SIDF only supports NetWare data.

The SIDF Association, based in Arlington Heights, Ill., consists of members from Novell and various backup and tape drive vendors, including Exabyte Corp., Sytron Corp., Legato Systems, Inc., Advanced Digital Information Corp. (ADIC), Cheyenne Software, Inc., Microsoft Corp., Sun Microsystems Computer Corp., IBM and Palindrome Corp.

SIDF has also aligned itself with the European Computer Manufacturers Association (ECMA), the parent organization of the International Standards Organization based in Geneva. The first official SIDF specification, released last February, has already been reviewed by ECMA and technical edits are being incorporated. By the spring of 1995, SIDF Version 1.01 is expected to be endorsed by the ECMA as an international standard for data interchangeability.

HOW SIDF WORKS

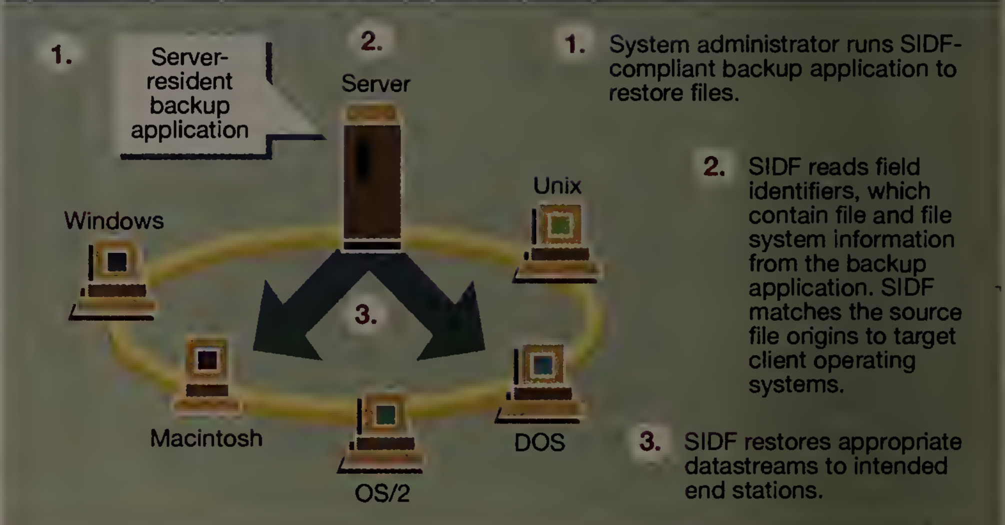
SIDF is a standard for representing file system data on all types of operating systems and platforms in a media-independent format. With SIDF, it no longer matters what network data application you are using or from what platform the files originated. In the past, data exchange across different file systems used with DOS, OS/2 or NetWare was possible only through proprietary methods. Due to each file system's peculiarities, the only way to reliably back up LAN data was to commit to a particular application's method of handling data.

Gratefully, such restrictions are no longer the case. Under SIDF, for example, you can restore DOS files on to an Apple Computer, Inc. Macintosh workstation. SIDF currently supports file systems found in DOS, NetWare, Unix and OS/2 environments, as well as the File Transfer and Access Management (FTAM) system.

SIDF accomplishes support of multiple file systems by using blocks of data to represent files and file system information. A basic block of information under SIDF is a field consisting of three components: a field identifier (FID), data size and the data itself. A FID, which can be one to four bytes long, identifies what type of information the field contains. A set of six operating system-specific bits, for example, denotes that a FID pertains to a specific operating system. SIDF defines numerous FIDs, including those for access data, session index and media count usage. Through the use of FIDs, SIDF can identify the file system-specific characteristics of a data set and handle the data appropriate to the environment in which it is currently located.

Via FIDs, SIDF has built-in extensibility — that is, the data format can be extended, allowing future support for new file systems. FIDs also permit developers to migrate features from their proprietary applications formats into SIDF.

File restoral the SIDF way



1. System administrator runs SIDF-compliant backup application to restore files.
2. SIDF reads field identifiers, which contain file and file system information from the backup application. SIDF matches the source file origins to target client operating systems.
3. SIDF restores appropriate datastreams to intended end stations.

GRAPHIC BY TERRI MITCHELL

DON'T LOSE YOUR HEADER

SIDF is a sequential access specification, which means users need to read data — one record after another in sequence — before getting to the specific information they want. While not able to match the speeds offered via random access methods, SIDF does shorten typical sequential file access times through its support of indices. Without indices, finding a file in a large collection of data could literally take hours. You'd have to go through the entire tape and read each session header. On a net where numerous servers are being managed, you are dealing with a lot of data, so it is important to be able to quickly find a file without having to take the time to read through an entire media.

SIDF employs two types of indices: a session index that labels all files in a session, and a partition index that identifies every session on a partition or tape. SIDF treats each client or workstation as a session, each with its own session "header" that matches the client with its corresponding data set.

Indicing also plays a role in timely LAN backup and restoral procedures. Since a client is treated as an individual session, SIDF makes it a straightforward matter to back up and restore data to disparate workstations.

Further, interleaving (the process of interweaving data from various clients to the backup media) enables you to back up data from many sources simultaneously. This means SIDF lets you back up multiple network clients concurrently — even if they support different file systems.

Additionally, SIDF supports spanning of sessions, a procedure where, at the time of server backup, any open sessions continue with a subsession header on the next disk partition or segment of the tape. This permits cascading — that is, when a tape becomes full, data can flow automatically over to the next tape drive without requiring an administrator's physical presence to change the tape.

SIDF RSVP

The SIDF format breaks through the data exchange barrier and provides administrators with an easier way to manage network data and storage. Using SIDF, administrators can more easily manage multiple file systems and platforms. This is especially important today as computing platforms are being added to networks and more cross-platform nets are being linked together.

It would be to administrators' and developers' benefit to become SIDF members if only to offer feedback and ideas that will make this format even more network appropriate. If you are interested in becoming a SIDF member or would like more information, contact the SIDF Association by calling (708) 255-3003.

➜ Abele is director of product management for Sytron Corp. in Westborough, Mass., and a member of the SIDF Association. She can be reached at (508) 898-0100.

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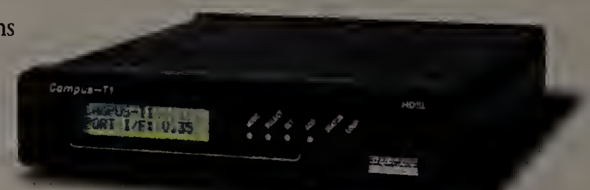

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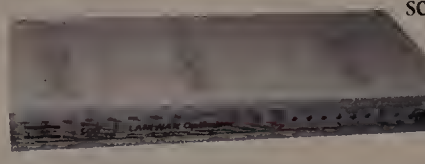

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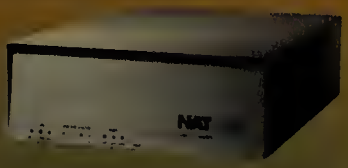

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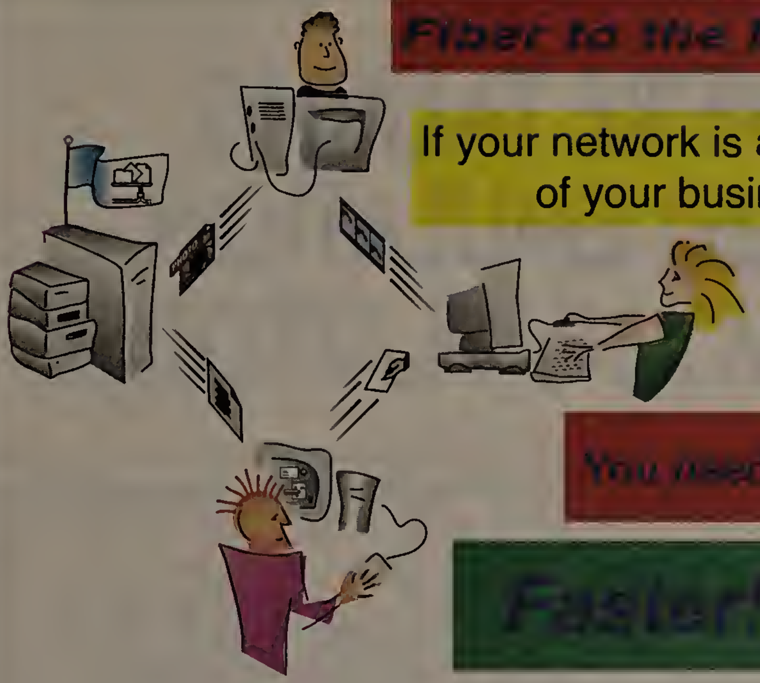

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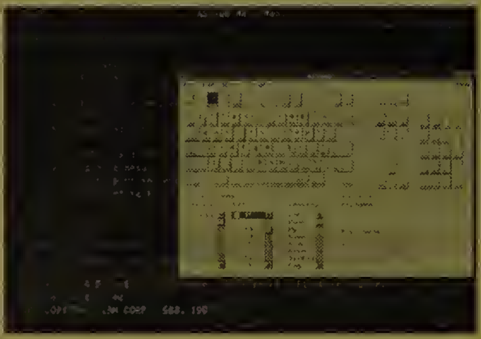

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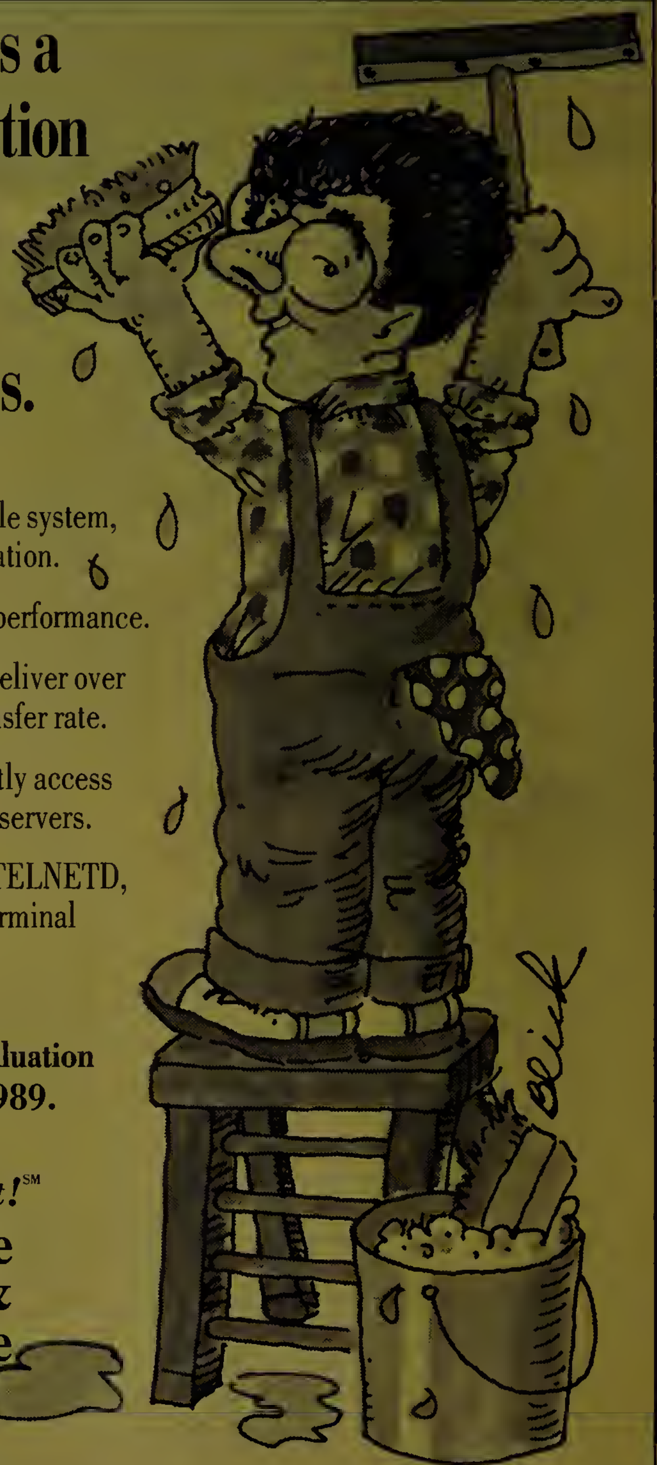

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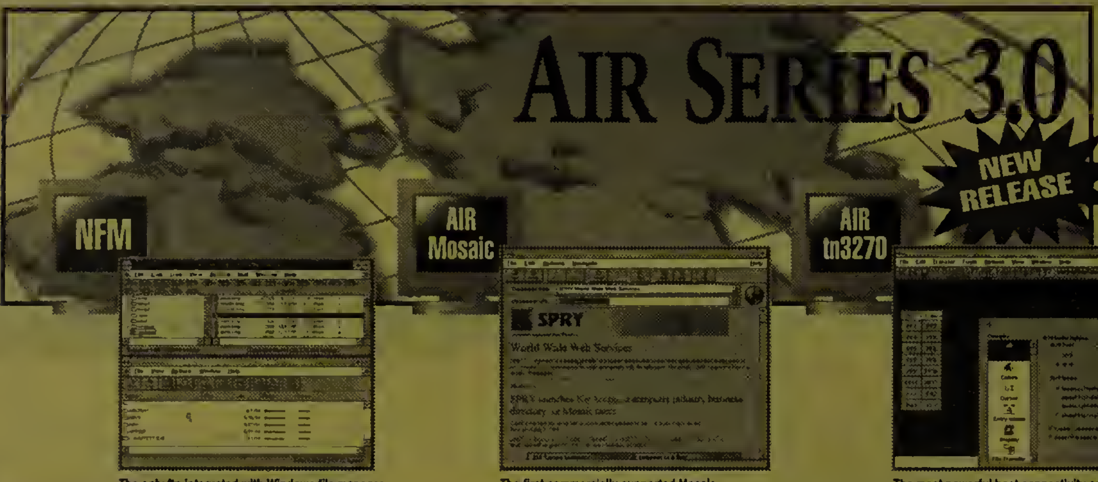

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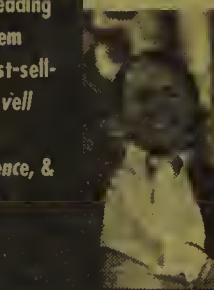

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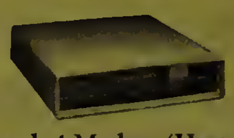

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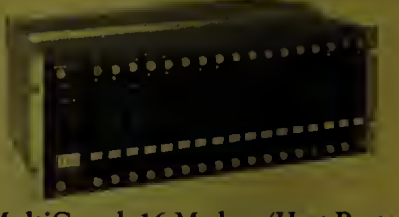

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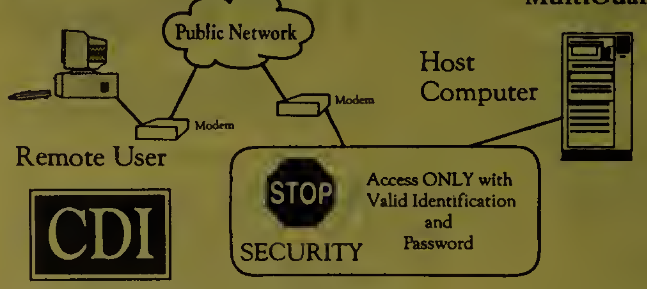

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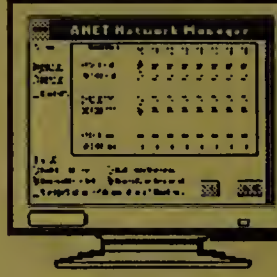

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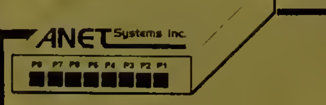
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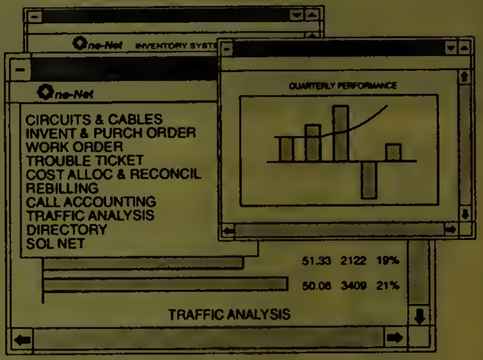

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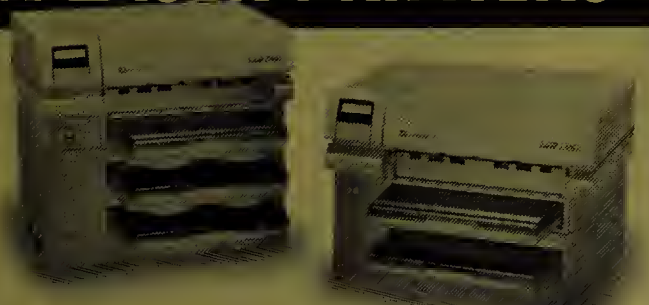

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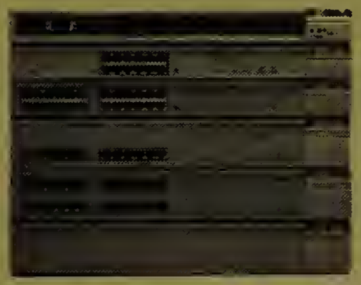

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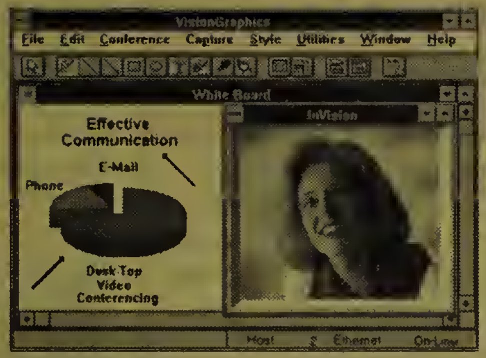

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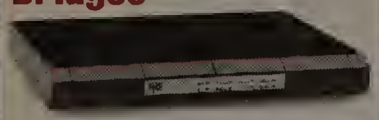

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Frame relay

Continued from page 1

the equipment that lets us run voice over the network, so we hit our break-even point right away."

Pacific Office installed voice/data packet multiplexers from ACT Networks, Inc. The voice technology imposes a slight delay on the line and is not quite toll quality, "but you can't really argue against it when it's basically free," Romjue said.

Packet-voice wares

[illegible]	Product(s)	Pricing	Availability	Notes
ACT Networks, Inc. (805) 388-2474	SDM-FP	$3,600	Now	ACT is developing new cards for WAN links up to 512K bit/sec, due by the end of the year.
	SDM-JFP	$2,250	October	
Cray Communications, Inc. (301) 317-7710	FPX2000: 5-slot chassis	$5,000	March '95	Cray currently sells these products overseas. U.S. versions will be available in March next year.
	FPX2000: 21-slot chassis	$10,000	March '95	
FastComm Communications Corp. (703) 318-7750	VoicePad (has not yet been announced)	Less than $1,000 per voice port	To be announced by year end	FastComm demonstrated voice over frame relay at the INTEROP 91 Fall trade show.
Memotec Communications Corp. (508) 681-0600	NetAccess 6 (6 slots)	$1,295	Now	
	NetAccess 16 (16 slots)	$2,495	Now	
OST, Inc. (703) 817-0400	FastLane F3	$6,495	Now	OST is a reselling partner of Australia's SCITEC Communications Systems, which manufactures FastLane.
	FastLane F5	$8,495	Now	
Penril Datability Networks (301) 921-8600	DVX651	$2,600	Now	The DVX651 is Penril's version of ACT Network's SDM-FP.
StrataCom, Inc. (408) 294-7600	FastPad	Less than $5,000	Now	FastPad is a version of ACT Network's SDM-FP.

GRAPHIC BY TERRI MITCHELL

Just this month, a large retail chain in Florida started connecting 50 stores to its headquarters over 56K bit/sec frame relay circuits.

"We set out to do voice over packet services from the start," said the company's MIS manager, who asked that he and his company not be identified.

The company previously relied on 56K bit/sec leased lines to tie the stores back to headquarters. Each line supported a single phone, fax or data call. "It was single-use only," he said. "If you wanted to call headquarters while someone was faxing, you had to wait in line."

The company turned for its solution to Penril Datability Networks, which happens to resell the same ACT Networks product that Pacific Office uses.

"There were a limited number of hardware offerings that supported public frame relay, and there were also a limited number of carriers willing to commit to the high [committed information rate] we wanted," the MIS manager said.

After many discussions, the carrier finally agreed to provide 32K bit/sec CIR on each 56K bit/sec link. "We pushed them for it because I need to know we can depend on enough bandwidth at all times," he said. The links carry mission-critical terminal-to-host communications that cannot be locked out by voice or fax calls.

BUYER BEWARE

While a number of vendors are bringing packet-voice products to market and the Frame Relay Forum is developing relevant standards, experts warn that users need to understand what they are buying into with packetized voice.

"Any user who thinks frame relay is an effective way to carry voice should start looking for a source of better information," said Tom Nolle, president of CIMI Corp. in Voorhees, N.J. "Frame relay networks happen to be lightly loaded today, so you can do things now that aren't going to be workable in the long run.

"The issue is delay handling," he added. "Frame relay isn't designed for voice, and the parameters that frame relay uses to provide optimum data transport do not relate to voice. It will eventually sound worse than satellite transmissions; and even if some people can tolerate it, most will not."

But the vendors selling data/voice packet multiplexers say their products are designed with these issues in mind.

"A year ago, people would not consider running voice over a public frame relay," said Bill Cox, national sales director at OST, Inc., which this month started selling the FastLane packet-voice product made by Scitec Communication Systems of Australia.

"The quality just wasn't there," Cox said. "But since then, the engineers have solved a lot of compression and buffering issues that make it workable."

Vendors argue that users will not be disappointed as long as they pay close attention to the CIR they have contracted from their carriers. "As long as you've thought out your CIR properly, you will not lose voice quality because of frames dropped in a public network," said Chris Talbot, ACTnet product manager for ACT Networks.

CIR needs will depend on user configurations and tolerance. Factors such as data load and speech compression come into play.

For example, a CIR of 19.2K bit/sec could support two 8K bit/sec voice channels and a 9.6K bit/sec data link.

In a worst-case scenario, with every channel bursting and the carrier enforcing 19.2K bit/sec CIR due to network congested, either data would have to be retransmitted or the voice calls would degrade.

The main technical problem of supporting voice over frame relay involves delay. Voice frames will not flow smoothly through the network. They will arrive at the other end with gaps between them, causing a warbling "jitter" on the phone.

The solution adopted by all vendors is to limit frame size — both voice and data — as traffic is encapsulated.

Buffering is also required. If voice frames arrive out of synch, buffering them for 20 to 60 msec enables them to be patched together. The result is a slight delay in conversation, much like speaking over a satellite link.

"The voice is good enough," Romjue said.

"If it was the other way around — if the data was choppy but the voice sounded great — I wouldn't even consider this approach," he added. ◘

Hollings

Continued from page 4

emboldened as the bill suffered a tidal wave of criticism from consumer groups, equipment manufacturers, state regulators and others. Almost all said the bill mandated too many FCC rule makings and could raise telephone rates by enforcing a grandiose vision of the Information Superhighway.

This argument — which began circulating around Washington a month ago (*NW*, Aug. 29, page 1) — also had turned many business users against the bill.

"I think it's good that they're waiting," said Sally York, communications systems manager at USL Capital in San Francisco. Earlier versions of the bill were acceptable, York said, but "it grew to be this monster." She cited an amendment by Sen. J.J. Exon (D-Neb.) that would have made carriers and employers potentially liable for obscene messages on communications nets.

Al Bieber, president of the Communications Managers Association, said RBHCs should have been allowed directly into new lines of business because substantial infrastructure changes are under way at the local level. "We're all very frustrated with the congressional process," he said.

By contrast, some users wanted a bill that would force more local competition. "The local Bell companies are killing us because of their quality of services," said Mark Stauff, telecommunications manager at Philadelphia-based Pep Boys, Manny Moe & Jack, Inc. "Dealing with them is a nightmare."

The International Communications Association, meanwhile, recently turned against the bill because it did not have enough safeguards against monopolistic activities by RBHCs after they entered new business.

But Brian Moir, ICA counsel, noted that visible business support for the bill had seemed to collapse by last week. "There was unanimity within the user community that this was a bad bill as it stood," Moir said.

➻ Senior Writer Bill Burch and Senior Washington Correspondent Ellen Messmer contributed to this story.

IBM

Continued from page 1

matically handles logistics such as distribution, compiling and version control.

The repository, which will include connections to client/server versions of IBM's DB2 database, will also include software configuration management capabilities.

It will support a range of IBM and third-party application development tools.

It will compete with a similar repository being developed by Texas Instruments, Inc. and Microsoft Corp. called the Application Structured Database.

Developers would use the repository as a central well of software, data definitions, business models for computer-aided software engineering tools, database configuration information and objects to help maintain software throughout its life cycle, according to Hanner.

Currently, many application development tool vendors offer repositories with their tools, but they are designed for developers working alone or in small groups.

VISUALAGE AND VISUALGEN

IBM will also announce later this year that it is linking its VisualAge and VisualGen application development tools more closely with its MQSeries middleware.

Linking middleware to development tools gives developers ready-to-use communications code. They can write applications to an MQSeries application program interface (API) and rely on MQSeries to route messages across various networks and operating systems. It also makes the applications more reliable by guaranteeing delivery of messages.

The company will release objects and sample code users can plug into their VisualAge and VisualGen applications that will handle the connection to MQSeries automatically.

The company will release objects and sample code users can plug into their VisualAge and VisualGen applications that will handle the connection to MQSeries automatically. Previously, users had to write to MQSeries APIs themselves.

VisualGen, a graphical user interface adaptation of IBM's venerable Cross System Product language, will come with three sample applications from which they can copy MQSeries communications links.

The benefit is fairly small but will make VisualGen, which has a steep learning curve and few shortcuts, easier to work with, Hanner said.

VisualAge, an object-oriented language based on SmallTalk, will get a series of objects users can plug in to their applications to link with MQSeries.

IBM will also announce later this year that its UltiMail client/server electronic mail product will use the MQSeries middleware as a backbone, according to Richard Sullivan, director of workgroup solutions for IBM's Software Solutions division.

Riding on message-oriented middleware is a quick way to give muscle to E-mail in the form of ensured delivery of messages, easy cross-platform capability and the robustness to act as a base for large-scale groupware applications.

The product will get a cut-down version of MQSeries and will be part of a larger product grouping IBM intends to use to compete with Lotus Development Corp.'s Notes and Microsoft Corp.'s upcoming Exchange groupware products. ◘

Comments?
See "How to reach us" on the back page.

US WEST

Continued from page 4

CAP, speculated Berge Ayvazian, vice president of communications research and consulting with The Yankee Group in Boston.

Interprise will supply network integration expertise, along with sales and support staff, while the local partners will bring the underlying network facilities and the local office space.

Along with Interprise, Bell Atlantic Corp. and BellSouth Corp. last week said they both plan to launch stronger national network integration programs, but neither was ready to detail plans.

Among national carriers, none of the Big Three have done a good job establishing a business identity for its network integration operations, said Jeff Kaplan, a director with the worldwide services group at Dataquest.

"Those three companies and the other regional Bell holding companies have got to find spiritual leaders who can establish an identifiable group within their organizations," Kaplan said.

NetFRAME

Continued from page 1

bring SMP capabilities to the next release of NetWare, probably by the end of the year.

NetFRAME would not comment other than to say that a press briefing, featuring company Chairman Carl Amdahl and Novell Chief Executive Officer Robert Frankenberg, is planned for Oct. 12.

"NetFRAME is positioning its new boxes as the server of servers by making them more powerful than traditional servers from Compaq [Computer Corp.] and the like, and almost as powerful as the multiprocessor RISC boxes it is trying to overtake," said Wayne Kernochan, director of commercial systems research for the Aberdeen Group, Inc. consultancy in Boston.

The new servers will feature an SMP-capable mode, which allows applications or communications tasks to be spread over multiple, tightly coupled CPUs. Until now, NetFRAME's servers only supported asymmetric multiprocessing (ASMP), which assigns a single application to each CPU in the box.

Lack of SMP support has been seen as NetFRAME's primary weakness, analysts said. Tricord Systems, Inc.'s PowerFrame ES 5000 for example, already supports both SMP and ASMP.

"NetFRAME had to have SMP to compete more effectively," said Jack Karp, president of the Affinity Research Corp. consultancy in Greenwich, Conn.

Sources said NetFRAME is expected to enhance its new servers to more efficiently run both UnixWare and NetWare. The two operating systems can work together on NetFRAME systems today, but the company is expected to add redundancy and performance features that will enhance their interaction.

All of this will further Novell's DPP, for which NetFRAME voiced support at a Novell briefing in March.

Novell's plan calls first for SMP support in NetWare 4.1, probably by the end of the year. Late next year, Novell will make it possible to run non-SMP NetWare Loadable Modules across multiple CPUs.

An SMP-capable NetFRAME server would help users exploit NetWare 4.1, spreading media management, data encryption or other CPU-intensive activities over multiple CPUs.

According to sources, the new servers will lash together 12 to 16 high-speed Pentium CPUs. The current top-of-the-line NetFRAME NF 450 can support nine 66-MHz CPUs. By comparison, RISC-based multiprocessors, such as those from Data General Corp., can support 16 CPUs, while the firm's closest Pentium-based competition, Tricord, can support six CPUs. Compaq's SMP boxes can support as many as four CPUs.

The new boxes will also support new clustered multiprocessing operating system and application software that will support SMP and let users spread processing across multiple servers in a cluster.

NETWORK WORLD

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Cisco

Continued from page 4

right now, but will have ramifications when ATM LANs proliferate.

"It's not exactly a gaping hole in ATM standards," said Thomas Nolle, president of consultancy CIMI Corp. in Voorhees, N.J. "But it's necessary and useful to have capabilities like this to be able to extend ATM LANs in a way that's more like ATM than routing. If all of these vendors were to adopt their own strategies for interconnecting [switches and route servers], then LANs from different vendors wouldn't interoperate because the protocol between the servers wouldn't be standardized."

Cisco's competitors, such as 3Com, say they'd like to help create this standard. They also note that Cisco's initiative represents a reversal for the company.

"It's interesting they are going forward with this when they typically have pushed their own IGRP [routing protocol] and used it almost as a lockout," said Bob Roman, 3Com product line manager.

3Com has already developed a protocol similar to the Route Distribution Protocol for use in the multiprocessor version of its NetBuilder II router. The protocol lets a route processor in that device communicate with a high-speed packet forwarding engine.

But 3Com also plans to support a standardized version of this protocol, Roman said.

InVision

Continued from page 1

week, Wellfleet Communications, Inc. committed to supporting ST-11 in its routers.

InVision also said it will support the H.320 standard for video over ISDN by next spring. This support will enable InVision's product to work with those from such desktop and room system vendors as AT&T, BT, Compression Labs, Inc. and PictureTel Corp.

InVision plans to toe the line at $595 for its new InVision 3.1 software release, priced the same as InVision 3.0, which supports point-to-point, interactive videoconferencing. Turnkey packages including software, hardware, camera and speaker will cost about $2,000. InVision's IP multicast software, which does not require a codec to receive video, will be sold separately for about $100 per station.

Router support

Currently, BBN Communications, Inc. is the only major vendor supporting the ST-II standard for video multicasting over IP.

EARLY STAGES

Packet-based desktop videoconferencing is still in the early stage of development in comparison with desktop systems that depend on switched services or private lines.

Among the challenges faced by packet-based systems are dealing with competing LAN and WAN traffic that can deteriorate a real-time videoconference's quality and routers that do not support video IP multicasting. Standards for video over the LAN are still under development; with work underway in the IETF to design uniform ways for applications and routers to set aside a virtual channel on the net through what's known as resource reservation.

InVision this week will detail a product direction that focuses on support for a number of these IETF standards aimed at improving the quality of packet-based videoconferencing.

InVision's 3.1 upgrade for video IP multicast will be based on the three-year-old ST-II protocol that defines both streaming multicast and a way to define service quality, such as jitter control, latency and error rate. ST-II was developed by the Department of Defense.

ST-II should not be confused with another IETF multicast videoconferencing standard, RFC 1075, called the Distance Vector Multicast Routing Protocol (DVMRP). It is deployed throughout the Internet's Multicast Backbone for the popular video programs produced by Carl Malamud with backing from Sun Microsystems, Inc. InVision will support DVMRP, which does not support reservation service.

InVision will also integrate into its software two more recent draft IETF standards called the Resource Reservation Protocol (RSVP) and the Real-Time Protocol (RTP).

According to Kurt Ziegler, president at Syzygy Communications, Inc., a Scotts Valley, Calif., vendor that is supplying the ST-II software for integration into InVision's 3.1 upgrade, RSVP is similar to ST-II without the multicast feature. RTP is a presentation- and session-layer protocol that lets an application define how the application will be transmitted, whether over ST-II, RSVP or other means.

©InVision: (703) 506-0094.

Migration

Continued from page 6

utility with a character-based interface. DS Standard, in comparison, provides a graphical utility that lets managers drag and drop servers and other directory objects to a new location on the directory tree.

"You can drag five or 10 bindery-based file servers and drop them onto one NDS tree template. It saves a ton of time," Serfass said. In addition, DS Standard will work on any version of NetWare 4.X — not just NetWare 4.1.

"You can drag five or 10 binder-based file servers and drop them onto one NDS tree template. It saves a lot of time."

NetWare 4.1 is on track to ship by the end of the year, according to Novell.

One beta tester raved about the product. "It's what's needed to link NetWare 3.X and NetWare 4.X. We're definitely going to use it," said Terry Storey, senior LAN consultant for Credit Suisse Financial in London. DS Standard simplifies migration because it imports trustee, print queue, print server, NetWare Name Service and user group information from a NetWare 3.X bindery into a NetWare 4.X directory, Storey said.

"You can get plans signed off from management for each department's tree and then merge those trees into a single companywide tree," he said. "It lets you see the end result before you actually install it."

The product also lets managers migrate NetWare 3.X servers to NetWare 4.X in stages. They can define projects, such as the Los Angeles network or the New York net, and merge those nets together at a later date.

DS Standard will be marketed by No-vell and Preferred Systems. Preferred Systems has also joined Novell's Technical Support Alliance to improve the product's support.

The product is scheduled to ship in the first week of October. Pricing begins at $295 per server for use with a five-user version of NetWare, which is about 10% the price of NetWare.

Preferred Systems: (800) 222-7638; Novell: (800) 453-1267.

Mardesich is a Los Angeles-based free-lance writer.

Back to Reality

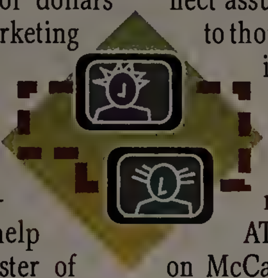
Users bless utility of Microsoft's dictatorship; A breather for CDPD

BY DAVID J. BUERGER

In *Network World's* three-part series on the "efficient dictatorship" — aka Microsoft Corp. — many users confessed serious concerns about Microsoft's influence.

Microsoft-bashing has replaced now-defunct baseball as the national pastime. Despite a good deal of grousing, however, two-thirds of the respondents to our survey admitted that Microsoft's bypassing of standards committees can benefit customers. Yes, the same people who complained continue to buy Microsoft's products. Users are pragmatic; they buy what works, even if it comes from Microsoft.

Users also have more power than they think; the Jolly Redmond Giant is vulnerable to their wallets, as the virtual failure of LAN Manager proved. Market rejection came despite millions of dollars spent on developing and marketing this networking software. (Just ask 3Com Corp. — a big erstwhile LAN Manager partner — for a second opinion.)



The newly reworked Windows NT 3.5 looks like it may help Microsoft finally join the roster of serious enterprise network players. But remember: The buyers will come only if Windows NT works at the right price. With respects to Marshall McLuhan, the product is *always* the message in the networking biz, despite the antics of clever marketing folks.

HIGH COST OF WIRELESS DATA

After a stock swap of $11.5 billion and 13 months of regulatory and legal hassles, AT&T last week finally gobbled up McCaw Cellular Communications, Inc. AT&T said it plans to invest over $1 billion to upgrade McCaw's networks to Cellular Digital Packet Data (CDPD) status, contributing to the 10% earnings hit it told stockholders to expect.

AT&T hopes this investment will make cellular attractive to mobile corporate customers. But recuperating the investment will probably exceed AT&T's expected time frame because providing a reliable wireless pipe solves only half the problem.

Early wireless data users often find that their network traffic breaks the piggy bank — big time. Those huge costs stem from extending the constant-connect assumptions of LAN applications to thousands of mobile users, which in turn drives up expensive cellular connect time. Reengineering mobile applications to minimize connect time is no overnight task. That gives AT&T breathing room to deliver on McCaw's tardy CDPD availability promises.

BELL ADVENTURE

A saying from the nation's capital goes: "We're from the government, and we're here to help you." I get the same visceral reaction hearing about US WEST's plans to provide network integration services with the help of at least one cable TV company.

The weakest link is the idea of a cable company providing network access and doing integration work for midsize to large businesses. Yeah, yeah, everyone's talking about the potential of cable companies for data networking. But do you actually know anyone using a cable company for data access?

US WEST's plans to expand into other Bells' territories, starting in the East, is more intriguing. A little healthy competition could help clean up what sometimes is a take-it-or-leave-it attitude — even for basic services.

I'm still waiting for NYNEX to sell me ISDN here in New York. Good luck, folks.

DO IT WITH FRAMES

This one's a sleeper that could turn into the nail sealing the coffin on traditional (and expensive) leased lines.

The innovation is voice over frame relay. Just as users multiplex voice and data over a single leased line, it's now possible to do the same with frame relay. A caveat is possible degradation in voice quality, depending on packet size and level of the committed information rate contracted with your carrier.

You'd have to try it to see if the voice quality is OK with your users, but this technique could save big bucks. The main naysayers are (surprise!) carriers worried about losing leased-line revenue. It's worth a look, especially for smaller to midsize companies that don't qualify for big-user discounts.

SEEING IS BELIEVING

A problem with most desktop videoconferencing schemes is they require a parallel network in addition to what you've got. That's another headache many network managers don't need.

This is why packet-video products from companies such as Vienna, Va.-based InVision are cool if you have a need to see your coworkers on-screen. You simply use the products on your existing TCP/IP-based LAN. No ISDN, no experimental isochronous connections, just the regular devil-you-know network.

InVision's current product works only point-to-point, but it will shortly be able to multicast to hundreds of other users. Late this year, you'll be able to hold interactive sessions with as many as four users. Once InVision adds H.320 compliance, you also should be able to tie PCs into traditional videoconferencing systems. The downside is once that happens, no one will be able to afford a hangover or bad hair day. Who said everything about LANs is technical?

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CyberSpeak

Voices from the reader network

New Novell CEO Robert Frankenberg is getting the company back to basics. What do you think of his efforts so far?

◆ "I think the fact that he's dropping some products and coming up with some ideas at least shows on the surface that he's trying to put the pieces together. When [Ray] Noorda was buying companies left and right, everyone was wondering what Novell was up to. Their biggest challenge now is how to get NetWare users from 3.X to 4.X because that's their bread and butter.

"We're looking at Windows NT because NetWare is still so much of a black box to most of our staff. But at least now Novell has somebody with a technical background and a vision, and who isn't afraid to kill products that don't fit in. He's clearly thinking and looking at what will fit into his plan.

Brian Moura, assistant city manager, San Carlos, Calif.

◆ "The first step in any good plan is to focus on exactly which direction you want to head. I believe Bob Frankenberg has done this fairly well to date. Time will tell if Novell stays on the right track."

Ted Zalac, PC/LAN support specialist, CSC/Compusource, Niles, Ohio

◆ "I think a more realistic relationship with Microsoft is a good thing, but hope that Frankenberg hasn't become yet another spineless supplicant of Chairman Bill [Gates].

"I was under the impression that OpenDoc had some technical advantages over the seemingly lame and piggy [Object Linking and Embedding], yet Frankenberg seems willing to throw OpenDoc away in the name of peace with Chairman Bill."

Jim Hogan, systems analyst, Seattle-King County Department of Public Health, Seattle

NextWeek CyberSpeak Out!

Would you employ your telephone company to do LAN/WAN network integration?

Get in touch by any of the means listed alongside. Responses are due by 8 p.m. Thursday, Sept. 29. Please include your name, company and address. We'll send you a CyberSpeak T-shirt if we print your response.

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